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Signed this 8th day of November 2007



C. E. SITCH  
Managing Director - UK Translation Division  
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# Patent

Utility Certificate

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Drawn up in Paris, 19 OCT. 2007

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**REQUEST FOR GRANT 1/2**

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DB 540 W / 250899

SUBMISSION OF DOCUMENTS DATE <b>6 SEP. 2002</b> PLACE <b>75 INPI PARIS B</b> NATIONAL REGISTRATION No. <b>02/11,091</b> ASSIGNED BY THE INPI DATE OF FILING ASSIGNED BY THE INPI <b>06 SEP. 2002</b>		<b>1</b> NAME AND ADDRESS OF THE APPLICANT OR THE REPRESENTATIVE TO WHOM THE CORRESPONDENCE IS TO BE ADDRESSED BREVALEX 3, rue du Docteur Lancereaux 75008 PARIS	
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Conversion of a European patent application <input type="checkbox"/> <i>Initial application</i>		No. _____ Date ____/____/____	
<b>3 TITLE OF THE INVENTION</b> (200 characters or spaces maximum) WAX-FREE COSMETIC COMPOSITION FOR MAKING UP OR CARING FOR KERATIN FIBRES			
<b>4 PRIORITY DECLARATION OR APPLICATION FOR THE BENEFIT OF THE FILING DATE OF A PRIOR FRENCH APPLICATION</b>		Country or organisation Date ____/____/____ No. Country or organisation Date ____/____/____ No. Country or organisation Date ____/____/____ No. <input type="checkbox"/> If there are other priorities, tick the box and use the "continuation" form	
<b>5 APPLICANT</b>		<input type="checkbox"/> If there are other applicants, tick the box and use the "continuation" form	
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<b>7 INVENTOR (S)</b>			
The inventors are the applicants		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No In this case, provide a separate designation of the inventor(s)	
<b>8 SEARCH REPORT</b>			
Immediate compilation		<input type="checkbox"/>	
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<b>9 REDUCTION OF FEES</b>			
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[signature] G. POULIN CPI 990200		[signature] MME BLANCANEUX	

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The inventors are the applicants		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No In this case, provide a separate designation of the inventor(s)	
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Your file references (optional)	SP21958/PA
NATIONAL REGISTRATION No.	02/11,091 of 06.09.2002

### TITLE OF THE INVENTION (200 characters or spaces maximum)

WAX-FREE COSMETIC COMPOSITION FOR MAKING UP OR CARING FOR KERATIN FIBRES

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(Name and capacity of the signatory)

[signature]

PARIS 3 JUNE 2003

G. POULIN

CPI 99 0200

**WAX-FREE COSMETIC COMPOSITION FOR MAKING UP OR CARING  
FOR KERATIN FIBRES**

**DESCRIPTION**

5

The present invention relates to a cosmetic composition for making up or caring for keratin fibres which does not contain waxes.

10 The invention also relates to the use of this composition for making up keratin fibres, in particular the eyelashes, eyebrows and hair, and also to a process for making up or cosmetically caring for said fibres.

15 The makeup process and composition according to the invention are more particularly intended for keratin fibres, in particular substantially longitudinal keratin fibres, of human beings, such as the eyelashes, the eyebrows and the hair, including false eyelashes;  
20 preferably, the makeup process and composition according to the invention are intended for the eyelashes.

The composition may be a makeup composition, a makeup  
25 base, a composition to be applied over a makeup, also called "topcoat", or else a composition for the cosmetic treatment or care of keratin fibres. More particularly, the invention relates to a composition which may be defined as an eye makeup composition, such  
30 as a mascara.

Eye makeup compositions, and in particular eyelash makeup compositions, such as mascaras, may be in various forms: for example, in the form of two-phase  
35 oil-in-water or O/W emulsions or water-in-oil W/O emulsions, of aqueous or anhydrous dispersions.



These compositions are characterized by their solids content, which is provided in part by a dispersed fatty phase consisting, for example, of one or more waxes for the purpose of bringing substance to the eyelashes and  
5 hence obtaining a volumizing makeup result.

It is known from the prior art that the greater the increase in solids content in a composition, the greater the deposition of substance on the eyelash and  
10 hence the more volumizing the result obtained will be.

However, increasing the solids content, i.e. most commonly the amount of waxes in a composition, such as an emulsion or dispersion, leads to an increase in the consistency of the product obtained, with the  
15 consequence that application to the eyelashes is tricky and difficult since the product is thick and viscous; it goes on with difficulty, heterogeneously and in lumps.

20

The increase in solids content is therefore often limited by the increase in consistency and does not exceed 45% of the total weight of the composition.

25 This limitation on the solids content is often linked to the impossibility of increasing the wax content in the fatty phase, which does not exceed 25% for reasons of feasibility; and, between 20% and 25% by weight of wax, the compositions are often very thick, compact and  
30 difficult to apply and exhibit unsatisfactory cosmetic properties.

This is generally the case with what are termed volumizing mascaras, which are difficult to apply and  
35 give a heterogeneous makeup result.

Another means of increasing the solids content is to incorporate solid particles such as fillers or

pigments, but the increase in consistency again limits the maximum percentage of solids; furthermore, the use of solid particles in a large amount is detrimental to smooth and homogeneous deposition, owing not only to  
5 the consistency but also to the size of the particles introduced, giving a rough, granular appearance to the deposit.

Conversely, it is possible to formulate compositions  
10 which are of low consistency and are easy to apply, but the wax content is then low, giving rise to unsatisfactory makeup effect.

Wax-free eye makeup compositions have also already been  
15 described. They are generally based on the use of film-forming polymers; however, it is not possible to formulate them at high solids contents since either the consistency increases sharply, in the case of soluble polymers, or the solids content is limited due to the  
20 fact that the compositions are in the form of aqueous or anhydrous dispersions or emulsions.

It is therefore not possible to obtain a composition for making up keratin fibres, in particular an "eye  
25 makeup" composition, which is devoid of waxes which comprise a high solids content. Another advantage is to be able to obtain compositions which preferably have a low consistency for easy and homogeneous application in conjunction with a satisfactory volumizing and  
30 separating effect.

There is therefore a need for a wax-free cosmetic composition for making up keratin fibres which has a high solids content while exhibiting, preferably  
35 retaining, a low consistency index.

There is also a need for a cosmetic composition for making up keratin fibres, for example an eye makeup

composition, such as a mascara, which is devoid of waxes and which exhibits excellent application properties at the time of its application, i.e. which allows in particular an easy and homogeneous  
5 application and which at the same time also provides excellent results with regard to the final makeup result, in particular a good volumizing effect. The aim of the invention is to provide a cosmetic composition for making up or caring for keratin fibres which meets,  
10 inter alia, these needs.

The aim of the invention is also to provide a composition for making up or caring for keratin fibres, such as a mascara composition, which solves the  
15 problems of the prior art compositions and which does not have the drawbacks, limitations, deficiencies and disadvantages of the prior art compositions.

This aim, along with others, is achieved in accordance  
20 with the invention by means of a cosmetic composition for making up or caring for keratin fibres which does not contain waxes and which has a solids content defined by a dry solids extract of greater than 45% by weight.

25 The compositions according to the invention, surprisingly, although containing no wax, have a high solids content, i.e. greater than 45% by weight, which the prior art compositions have never been able to  
30 obtain without waxes being incorporated therein.

Another advantage provided by the absence of waxes is that it further promotes the smooth, homogeneous and non-granular appearance of the deposit, while thereby  
35 allowing the solids content to be increased still further, since the influence of the waxes on the consistency does not arise.

Advantageously, the composition according to the invention has a consistency of less 1000 Pa.

Thus, the wax-free compositions according to the invention advantageously exhibit a combination of a  
5 high solids content, i.e. greater than 45% by weight, and a low consistency index, i.e. less than 1000 Pa, which has never been described or suggested in the prior art.

10

The consistency index is a parameter which allows an account to be given of the overall consistency of the product.

15 Due to the high overall solids content in the final composition and, advantageously, a satisfactory low consistency index, generally of the order of that of known prior art mascaras, or even less than that of known mascaras, an easy application and homogeneous  
20 deposition, in tandem with a satisfactory volumizing and separating effect, are obtained.

In other words, when the consistency is less than 1000 Pa, the composition according to the invention  
25 makes it possible, for the first time, as a result of the combination of two specific parameters, each lying within a specific range, to combine excellent application properties of the composition with excellent properties of deposition of the makeup  
30 obtained with this composition.

The compositions according to the invention solve the problems of the prior art compositions and do not exhibit the deficiencies, limitations and disadvantages  
35 of the prior art compositions.

In particular, the compositions of the invention overcome the widespread prejudice in the prior art

according to which it was impossible to obtain a makeup composition, in particular an eye makeup composition, which was both devoid of waxes and had a high solids content.

5

When the consistency of the composition according to the invention is less than 1000 Pa, the compositions according to the invention also overcome the prejudice according to which it was impossible to obtain a wax-free makeup composition having a high solids content and, at the same time, a satisfactory consistency for easy and homogeneous application combined with a satisfactory volumizing and separating effect.

10

15

In addition, the composition according to the invention is stable, even over a long period of time, and homogeneous. Advantageously, the dry solids extract is greater than 46% by weight, preferably greater than 47% by weight, more preferably greater than 48% by weight and better still greater than 50% by weight. In particular, the dry extract of the composition is less than 85% by weight, preferably less than 75%, and better still less than 65%.

20

25

According to the invention, the higher the solids content, defined by the dry solids extract, the greater the volumizing effect, while application still remains easy and the deposition homogeneous, even at such high solids contents.

30

The consistency index is advantageously from 1 to 900, preferably from 10 to 800; within these preferred ranges, the application properties are further improved and are always in tandem with an enhanced volumizing effect, and even a likewise enhanced separating effect.

35

Advantageously, the composition according to the invention comprises at least one fatty phase comprising

at least one particular, specific structuring agent which may, surprisingly, be incorporated into the composition, even at very high contents, which may range, for example, up to 60% by weight of the composition without substantially increasing the consistency index or causing the composition to solidify.

10 It is completely surprising that the use of the specific structuring agent according to the invention, instead of the waxes used in the prior art, does not cause any increase in consistency and therefore makes it possible to obtain overall solids contents which are much higher than in the prior art.

15 The fatty phase may form a continuous phase of the combination. In particular, the composition according to the invention may be anhydrous.

20 The total fatty phase of the composition may represent from 10 to 60%, preferably from 15 to 50%, more preferably from 20 to 40% of the total weight of the composition.

25 The incorporation of a specific structuring agent of this kind in part or in whole into the fatty phase is possible without greatly increasing the consistency index and it is therefore possible, by virtue of these specific structuring agents, to attain solids contents of greater than 45% - much higher than in the prior art, without employing waxes.

30 The incorporation of this specific structuring agent into the fatty phase of the composition makes it possible, surprisingly, to obtain a high solids content advantageously combined with a satisfactory consistency and therefore to obtain the combination of an easy and

homogeneous application with a satisfactory thickening and separating effect.

5 In other words, it has been possible according to the invention, without having recourse to waxes, to obtain compositions which are stable and homogeneous with a dry solids extract of greater than 45%, by using a specific structuring agent. Advantageously, it has been possible, moreover, surprisingly to obtain a  
10 consistency index of less than 1000 Pa.

Said structuring agent is defined by given tack and hardness properties.

15 Said structuring agent is characterized by:

- a tack value  $\geq 0.1$  N.s, in particular from 0.1 to 30 N.s; preferably  $\geq 0.5$  N.s, in particular from 0.5 N.s to 20 N.s; better still  $\geq 0.8$  N.s, in  
20 particular from 0.8 to 10 N.s; and even better still  $\geq 1$ , in particular from 1 to 5 N.s;
- a hardness value  $\leq 30$  MPa, in particular between 0.01 and 30 MPa; preferably between 0.05 and 25 MPa; better still between 0.1 and 20 MPa.

25 Another possible advantage of using this specific structuring agent in the compositions of the invention is that it also allows improved attachment to the keratin material, such as the eyelash, in a manner  
30 which is homogeneous and rapid, owing to its optionally tacky character.

It has been found that the incorporation of such an agent, defined by specific values of certain  
35 parameters, into the fatty phase of the composition of the invention made it possible precisely to obtain high solids contents without waxes, optionally in combination with the desired low consistencies, and

consequently to obtain the combination of desired properties and effects.

5 The structuring agent(s) may preferably be selected from combinations of a specific compound with at least one oil.

10 The specific compound may be selected from semi-crystalline polymers; fatty-phase rheological agents, such as polyamide-type polymers and hydrophobic silicas; and mixtures thereof.

15 It is specified that, according to the invention, in the case of the combinations of the specific compound with an oil, the term "oil" refers to a fatty substance which is liquid at ambient temperature.

The oils may be hydrocarbon oils and/or silicone oils and/or fluoro oils. These oils may be of animal, 20 vegetable, mineral or synthetic origin. By "hydrocarbon oil" is meant an oil containing primarily carbon and hydrogen atoms and optionally one or more functional groups selected from hydroxyl, ester, ether and carboxylic functional groups. By way of example of oils 25 that can be used in the invention, mention may be made of:

- hydrocarbon oils of animal origin such as perhydosqualene;
- vegetable hydrocarbon oils such as liquid 30 triglycerides of fatty acids of 4 to 24 carbon atoms, such as the triglycerides of heptanoic or octanoic acid or else sunflower oil, maize oil, soya oil, marrow oil, grapeseed oil, sesame oil, hazelnut oil, apricot oil, macadamia oil, castor oil or avocado oil,
- 35 caprylic/capric acid triglycerides such as those sold by Stearineries Dubois or those sold under the names Miglyol 810, 812 and 818 by Dynamit Nobel, jojoba oil and shea butter;



- linear or branched hydrocarbons of mineral or synthetic origin, such as liquid paraffins and their derivatives, petroleum jelly, polydecenes, polybutenes and hydrogenated polyisobutene such as Parleam;
- 5 - synthetic esters and ethers, in particular those of fatty acids, such as the oils of formula  $R_1COOR_2$  in which  $R_1$  represents the residue of a higher fatty acid containing from 1 to 40 carbon atoms and  $R_2$  represents a hydrocarbon chain containing from 1 to 40 carbon  
10 atoms, with  $R_1 + R_2 \geq 10$ , such as, for example, purcellin oil, isononyl isononanoate, isopropyl myristate, 2-ethylhexyl palmitate, 2-octyldedecyl stearate, 2-octyldodecyl erucate, isostearyl isostearate, tridecyl trimellitate; hydroxyl esters  
15 such as isostearyl lactate, octyl hydroxystearate, octyldodecyl hydroxystearate, diisostearyl malate, triisocetyl citrate, and heptanoates, octoanates and decanoates of fatty alcohols; polyol esters such as propylene glycol dioctanoate, neopentyl glycol  
20 diheptanoate, diethylene glycol diisononanoate; and pentaerythritol esters such as pentaerythrityl tetraistearate;
- fatty alcohols having from 12 to 26 carbon atoms, such as octyldodecanol, 2-butyloctanol, 2-hexyldecanol,  
25 2-undecylpentadecanol and oleyl alcohol;
- fluoro oils which are optionally partially hydrocarbon-based and/or silicone-based;
- silicone oils such as volatile or non-volatile linear or cyclic polydimethylsiloxanes (PDMS);  
30 polydimethylsiloxanes containing alkyl, alkoxy or phenyl groups, which groups are pendant or at the end of the silicone chain and have from 2 to 24 carbon atoms; phenyl silicones such as phenyl trimethicones, phenyl dimethicones, phenyltrimethylsiloxydiphenyl-  
35 siloxanes; diphenyl dimethicones, diphenylmethyl-diphenyltrisiloxanes and 2-phenylethyl trimethyl-siloxy-silicates, and
- mixtures thereof.

The oil preferably has a molecular mass of greater than or equal to 250 g/mol, in particular between 250 and 10 000 g/mol, preferably greater than or equal to 5 300 g/mol, in particular between 300 and 8000 g/mol, and better still greater than or equal to 400 g/mol, in particular between 400 and 5000 g/mol. This oil may be selected from:

- polybutylenes such as Indopol H-100 (of molar mass or MM = 965 g/mol), Indopol H-300 (MM = 1340 g/mol) and Indopol H-1500 (MM = 2160 g/mol), which are sold or manufactured by Amoco;
- hydrogenated polyisobutylenes such as Panalane H-300 E, sold or manufactured by Amoco (M = 1340 g/mol), Viseal 20000, sold or manufactured by Synteal (MM = 6000 g/mol) and Rewopal PIB 1000, sold or manufactured by Witco (MM = 1000 g/mol);
- polydecenes and hydrogenated polydecenes such as Puresyn 10 (MM = 723 g/mol) and Puresyn 150 (MM = 9200 g/mol), sold or manufactured by Mobil Chemicals,
- esters such as
- esters of linear fatty acids having a total carbon number ranging from 30 to 70, such as pentaerythrityl tetrapelargonate (MM = 697.05 g/mol),
- hydroxyl esters such as diisostearyl malate (MM = 639 g/mol),
- aromatic esters such as tridecyl trimellitate (MM = 757.19 g/mol),
- esters of C24-C28 branched fatty acids or fatty alcohols, such as those described in application EP-A-0 955 039, and especially triisocetyl citrate (MM = 865 g/mol), pentaerythrityl tetraisononanoate (MM = 697.05 g/mol), glyceryl triisostearate (MM = 891.51 g/mol), glyceryl 2-tridecyltetradecanoate (MM = 1143.98 g/mol), pentaerythrityl tetraisostearate (MM = 1202.02 g/mol), poly-2-glyceryl tetraisostearate

(MM = 1232.04 g/mol) or else pentaerythrityl 2-tetradecyltetradecanoate (MM = 1538.66 g/mol),

- oils of plant origin such as sesame oil (820.6 g/mol), and

5 - mixtures thereof.

In accordance with the invention, in the case of the abovementioned combinations, the term "semi-crystalline polymer" refers to polymers containing a crystallizable portion, a crystallizable pendant chain or a  
10 crystallizable block in the skeleton, and an amorphous portion in the skeleton, and having a first-order reversible phase-change temperature, in particular of fusion (solid-liquid transition). When the  
15 crystallizable portion is in the form of a crystallizable block of the polymeric skeleton, the amorphous portion of the polymer is in the form of an amorphous block; in this case the semi-crystalline polymer is a block copolymer of, for example, diblock,  
20 triblock or multiblock type comprising at least one crystallizable block and at least one amorphous block. A block generally comprises at least 5 identical repeating units. The crystallizable block or blocks are then different in chemical nature from the amorphous  
25 block or blocks.

The semi-crystalline polymer according to the invention has a melting point of greater than or equal to 30°C (in particular ranging from 30°C to 80°C), preferably  
30 ranging from 30°C to 60°C. This melting point is a first-order change-of-state temperature.

This melting point can be measured by any known method and in particular by means of a differential scanning  
35 calorimeter (DSC).

Advantageously the semi-crystalline polymer or polymers to which the invention applies exhibit a number-average molecular mass of greater than or equal to 1000.

5 Advantageously, the semi-crystalline polymer or polymers of the composition of the invention have a number-average molecular mass  $\overline{M}_n$  ranging from 2000 to 800 000, preferably from 3000 to 500 000, better still from 4000 to 150 000, and in particular less than  
10 100 000, and better still from 4000 to 99 000. Preferably they have a number-average molecular mass of more than 5600, ranging for example from 5700 to 99 000.

15 A "crystallizable chain or block" in the sense of the invention is a chain or block which if it were alone would pass reversibly from the amorphous state to the crystalline state depending on whether the temperature was above or below the melting point. A chain in the  
20 sense of the invention is a group of atoms which is pendant or lateral relative to the skeleton of the polymer. A block is a group of atoms belonging to the skeleton, the group constituting one of the repeating units of the polymer. Advantageously the  
25 "crystallizable pendant chain" may be a chain containing at least 6 carbon atoms.

The crystallizable block(s) or chain(s) of the semi-crystalline polymers preferably represent at least 30%  
30 of the total weight of each polymer and better still at least 40%. The semi-crystalline polymers of the invention containing crystallizable blocks are block or multiblock polymers. They can be obtained by polymerizing monomers containing reactive double bonds  
35 (or ethylenic bonds) or by polycondensation. When the polymers of the invention are polymers containing crystallizable side chains they are advantageously in random or statistical form.

The semi-crystalline polymers of the invention are preferably synthetic in origin. Moreover, they do not include a polysaccharide skeleton. Generally speaking, the crystallizable units (chains or blocks) of the semi-crystalline polymers according to the invention originate from one or more monomers containing crystallizable block(s) or chain(s) used for the preparation of the semi-crystalline polymers.

In accordance with the invention the low-melting-point semi-crystalline polymer and the high-melting-point semi-crystalline polymer are selected from block copolymers containing at least one crystallizable block and at least one amorphous block, homopolymers and copolymers carrying at least one crystallizable side chain per repeating unit, and mixtures thereof.

The semi-crystalline polymers which can be used in the invention are in particular:

- block polyolefin copolymers of controlled crystallization, particularly those whose monomers are described in EP-A-0 951 897,

- polycondensates, particularly those of aliphatic or aromatic polyester type or aliphatic/aromatic copolyester type,

- homopolymers or copolymers carrying at least one crystallizable side chain and homopolymers or copolymers carrying in the skeleton at least one crystallizable block, such as those described in US-A-5 156 911,

- homopolymers or copolymers carrying at least one crystallizable side chain, in particular containing one or more fluorine-containing groups, such as those

- described in WO-A-01/19333,

- and mixtures thereof.

In these two latter cases the crystallizable side chain(s) or block(s) are hydrophobic.

5 A) Semi-crystalline polymers having crystallizable side chains

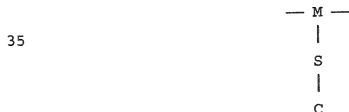
Mention may be made in particular of those defined in US-A-5,156,911 and WO-A-01/19333. These are homopolymers or copolymers containing from 50 to 100% by weight of units resulting from the polymerization of one or more monomers which carry a crystallizable hydrophobic side chain.

15 • These homopolymers or copolymers are of any kind, provided that they meet the conditions indicated above.

They may result:

- from the polymerization, in particular the free-radical polymerization, of one or more monomers containing reactive or ethylenic double bond(s) in respect of a polymerization, namely containing a vinylic, (meth)acrylic or allylic group;
- from the polycondensation of one or more monomers which carry co-reactive groups (carboxylic or sulphonic acid, alcohol, amine or isocyanate), such as, for example, polyesters, polyurethanes, polyethers, polyureas and polyamides.

30 Generally speaking these polymers are selected in particular from homopolymers and copolymers resulting from the polymerization of at least one crystallizable-chain monomer which can be represented by formula X:



with M representing an atom of the polymeric skeleton, S representing a spacer and C representing a crystallizable group.

5 The crystallizable chains "-S-C" may be aliphatic or aromatic, optionally fluorinated or perfluorinated. "S" represents in particular a  $(\text{CH}_2)_n$  or  $(\text{CH}_2\text{CH}_2\text{O})_n$  or  $(\text{CH}_2\text{O})$  group which is linear or branched or cyclic, with n  
10 being an integer ranging from 0 to 22. "S" is preferably a linear group. Preferably "S" and "C" are different.

When the crystallizable chains "-S-C" are aliphatic  
15 hydrocarbon chains they contain alkyl hydrocarbon chains containing at least 11 carbon atoms and not more than 40 carbon atoms, and better still not more than 24 carbon atoms. They are in particular aliphatic chains or alkyl chains possessing at least 12 carbon  
20 atoms and preferably the chains in question are  $\text{C}_{14}$ - $\text{C}_{24}$  alkyl chains. When the chains in question are fluorinated or perfluorinated alkyl chains they contain at least 6 fluorinated carbon atoms and in particular at least 11 carbon atoms of which at least 6 carbon  
25 atoms are fluorinated.

Examples of semi-crystalline polymers or copolymers containing one or more crystallizable chains include those resulting from the polymerization of one or more  
30 monomers as follows: saturated alkyl (meth)acrylates with the  $\text{C}_{14}$ - $\text{C}_{24}$  alkyl group, perfluoroalkyl (meth)acrylates with a  $\text{C}_{11}$ - $\text{C}_{15}$  perfluoroalkyl group, N-alkyl(meth)acrylamides with the  $\text{C}_{14}$  to  $\text{C}_{24}$  alkyl group with or without a fluorine atom, vinyl esters  
35 containing alkyl or perfluoro(alkyl) chains with the  $\text{C}_{14}$  to  $\text{C}_{24}$  alkyl group (with at least 6 fluorine atoms for a perfluoroalkyl chain), vinyl ethers containing alkyl or perfluoro(alkyl) chains with the  $\text{C}_{14}$ - $\text{C}_{24}$  alkyl group and

at least 6 fluorine atoms for a perfluoroalkyl chain, C<sub>14</sub> to C<sub>24</sub> alpha-olefins such as, for example, octadecene, para-alkylstyrenes with an alkyl group containing 12 to 24 carbon atoms, and mixtures thereof.

5

When the polymers result from a polycondensation the hydrocarbon and/or fluorinated crystallizable chains as defined above are carried by a monomer which may be a diacid, a diol, a diamine or a diisocyanate.

10

When the polymers of the invention are copolymers they also include from 0 to 50% of groups Y or Z resulting from the copolymerization:

15 a) of Y, which is a polar or non-polar monomer or a mixture of the two:

• when Y is a polar monomer it is either a monomer which carries polyoxyalkylenated groups (especially oxyethylenated and/or oxypropylenated), a hydroxyalkyl (meth)acrylate such as hydroxyethyl acrylate, 20 (meth)acrylamide, an N-alkyl(meth)acrylamide, an N,N-dialkyl(meth)acrylamide such as, for example, N,N-diisopropylacrylamide or N-vinylpyrrolidone (NVP), N-vinylcaprolactam, a monomer which carries at least 25 one carboxylic acid group such as (meth)acrylic, crotonic, itaconic, maleic or fumaric acid or which carries a carboxylic anhydride group such as maleic anhydride, and mixtures thereof.

• When Y is a non-polar monomer it may be an ester 30 of the linear, branched or cyclic alkyl (meth)acrylate type, a vinyl ester, an alkyl vinyl ether, an alpha-olefin, styrene or styrene substituted by a C<sub>1</sub> to C<sub>10</sub> alkyl group, such as  $\alpha$ -methylstyrene or a polyorganosiloxane-type macromonomer containing vinylic 35 unsaturation.

"Alkyl" for the purposes of the invention is a saturated group, in particular a C<sub>8</sub> to C<sub>24</sub> group, unless



specifically mentioned, and better still a C<sub>14</sub> to C<sub>24</sub> group.

- 5     β) of Z, which is a polar monomer or a mixture of polar monomers. In this case Z has the same definition as "polar Y" defined above.

- 10     Semi-crystalline polymers containing a crystallizable side chain are preferably alkyl (meth)acrylate or alkyl(meth)acrylamide homopolymers with an alkyl group as defined above, and in particular C<sub>14</sub>-C<sub>24</sub> group, copolymers of these monomers with a hydrophilic monomer, preferably of a different kind from (meth)acrylic acid, such as N-vinylpyrrolidone, or  
15     hydroxyethyl (meth)acrylate, and mixtures thereof.

B) Polymers carrying in the skeleton at least one crystallizable block

- 20     These polymers are, in particular, block copolymers consisting of at least 2 chemically different blocks of which one is crystallizable.
- It is possible to use the block polymers defined in patent US-A-5,156,911;
  - 25     - block copolymers of olefin or of cycloolefin containing a crystallizable chain, such as those obtained from the block polymerization of:
    - cyclobutene, cyclohexene, cyclooctene, norbornene (i.e. bicyclo[2.2.1]hept-2-ene), 5-methylnorbornene,  
30     5-ethylnorbornene, 5,6-dimethylnorbornene, 5,5,6-trimethylnorbornene, 5-ethylidenenorbornene, 5-phenylnorbornene, 5-benzylnorbornene, 5-vinyl-norbornene, 1,4,5,8-dimethano-1,2,3,4,4a,5,8a-octahydro-naphthalene, dicyclopentadiene or mixtures thereof,
    - 35     • with ethylene, propylene, 1-butene, 3-methyl-1-butene, 1-hexene, 4-methyl-1-pentene, 1-octene, 1-decene, 1-eicosene or mixtures thereof,

- and in particular block copoly(ethylene/norbornene) and block (ethylene/propylene/ethylidenenorbornene) terpolymers. It is also possible to use those resulting from the block copolymerization of at least two C<sub>2</sub>-C<sub>16</sub> and better still C<sub>2</sub>-C<sub>12</sub> and even better still C<sub>4</sub>-C<sub>12</sub>  $\alpha$ -olefins, such as those mentioned above, and in particular the block bipolymers of ethylene and of 1-octene.
- 10 - The copolymers may be copolymers having at least one crystallizable block, the remainder of the copolymer being amorphous (at ambient temperature). These copolymers may further comprise two chemically different crystallizable blocks. Preferred copolymers are those which possess at ambient temperature both a crystallizable block and an amorphous block which is both hydrophobic and lipophilic, the blocks being distributed sequentially; mention may be made, for example, of polymers possessing one of the following crystallizable blocks and one of the following amorphous blocks:
- Naturally crystallizable blocks: a) polyester such as poly(alkylene terephthalate), b) polyolefin such as polyethylenes or polypropylenes.
- 25 • Amorphous and lipophilic block, such as amorphous polyolefins or copoly(olefin)s such as poly(isobutylene), hydrogenated polybutadiene and hydrogenated poly(isoprene).
- 30 Possible examples of such copolymers containing a crystallizable block and an amorphous block, the blocks being distinct, include:
- 35  $\alpha$ ) block poly( $\epsilon$ -caprolactone)-b-poly(butadiene) copolymers, used preferably in hydrogenated form, such as those described in the article "Melting behavior of poly( $\epsilon$ -caprolactone)-block-polybutadiene copolymers" by S. Nojima, *Macromolécules*, 32, 3727-3734 (1999).

β) hydrogenated poly(butylene terephthalate)-b-poly(isoprene) block or multiblock copolymers, cited in the article "Study of morphological and mechanical properties of PP/PBT" by B. Boutevin et al., Polymer Bulletin, 34, 117-123 (1995).

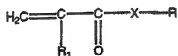
γ) the poly(ethylene)-b-copoly(ethylene/propylene) block copolymers cited in the articles "Morphology of semi-crystalline block copolymers of ethylene-(ethylene-alt-propylene)" by P. Rangarajan et al., Macromolecules, 26, 4640-4645 (1993) and "Polymer aggregates with crystalline cores: the system poly(ethylene)-poly(ethylene-propylene)" by P. Richter et al., Macromolécules, 30, 1053-1068 (1997).

δ) the poly(ethylene)-b-poly(ethylethylene) block copolymers cited in the general article "Crystallization in block copolymers" by I.W. Hamley, Advances in Polymer Science, Vol. 148, 113-137 (1999).

The semi-crystalline polymers of the composition of the invention may be non-crosslinked or partially crosslinked, since the degree of crosslinking is not detrimental to their dissolution or dispersion in the liquid fatty phase by heating above their melting point. This may then be a chemical crosslinking, by reaction with a polyfunctional monomer during the polymerization. It may also be a physical crosslinking, which may then be due either to the establishment of bonds of hydrogen type or dipolar type between groups carried by the polymer, such as, for example, the dipolar interactions between carboxylate ionomers, these interactions being low in quantity and borne by the polymer skeleton; or due to phase separation between the crystallizable blocks and the amorphous blocks carried by the polymer.

The semi-crystalline polymers of the composition according to the invention are preferably non-crosslinked.

- 5 According to one particular embodiment of the invention the polymer is selected from copolymers resulting from the polymerization of at least one monomer containing a crystallizable chain, selected from saturated C<sub>14</sub> to C<sub>24</sub> alkyl (meth)acrylates, C<sub>11</sub> to C<sub>15</sub> perfluoroalkyl  
10 (meth)acrylates, C<sub>14</sub> to C<sub>24</sub> N-alkyl(meth)acrylamides with or without a fluorine atom, vinyl esters containing C<sub>14</sub> to C<sub>24</sub> alkyl or perfluoroalkyl chains, vinyl ethers containing C<sub>14</sub> to C<sub>24</sub> alkyl or perfluoroalkyl chains, C<sub>14</sub> to C<sub>24</sub> α-olefins, para-  
15 alkylstyrenes with an alkyl group containing 12 to 24 carbon atoms, with at least one optionally fluorinated C<sub>1</sub> to C<sub>10</sub> monocarboxylic ester or amide, which can be represented by the following formula:



- 20 in which R<sub>1</sub> is H or CH<sub>3</sub>, R represents an optionally fluorinated C<sub>1</sub>-C<sub>10</sub> alkyl group and X represents O, NH or NR<sub>2</sub>, where R<sub>2</sub> represents an optionally fluorinated C<sub>1</sub>-C<sub>10</sub> alkyl group.

- 25 According to one more particular embodiment of the invention the polymer is derived from a monomer containing a crystallizable chain, selected from saturated C<sub>14</sub> to C<sub>22</sub> alkyl (meth)acrylates.

- 30 As a specific example of a structuring semi-crystalline polymer that can be used in the composition according to the invention, mention may be made of the Interlimer® products from Landec which are described in  
35 the brochure "Interlimer® polymers", Landec IP22 (Rev. 4-97). These polymers are in solid form at

ambient temperature (25°C). They carry crystallizable side chains and have the above formula X.

The semi-crystalline polymers may in particular be:

- 5 those described in Examples 3, 4, 5, 7, 9 and 13 of patent US-A-5,156,911 containing a -COOH group, resulting from the copolymerization of acrylic acid and C<sub>5</sub> to C<sub>16</sub> alkyl (meth)acrylate, and more particularly from the copolymerization:
- 10 • of acrylic acid, hexadecyl acrylate and isodecyl acrylate in a 1/16/3 weight ratio,  
• of acrylic acid and pentadecyl acrylate in a 1/19 weight ratio,  
• of acrylic acid, hexadecyl acrylate and ethyl  
15 acrylate in a 2.5/76.5/20 weight ratio,  
• of acrylic acid, hexadecyl acrylate and methyl acrylate in a 5/85/10 weight ratio,  
• of acrylic acid and octadecyl methacrylate in a 2.5/97.5 weight ratio,  
20 • of hexadecyl acrylate, polyethylene glycol methacrylate monomethyl ether, containing 8 ethylene glycol units, and acrylic acid in an 8.5/1/0.5 weight ratio.
- 25 It is also possible to use the structure "O" from National Starch, as described in US-A-5,736,125, with a melting point of 44°C, and also semi-crystalline polymers containing crystallizable pendant chains containing fluorinated groups, as described in  
30 Examples 1, 4, 6, 7 and 8 of WO-A-01/19333.

- It is additionally possible to use the low-melting-point semi-crystalline polymers obtained by copolymerizing stearyl acrylate and acrylic acid or  
35 NVP, as described in US-A-5,519,063 or EP-A-550745, and more especially those described in polymer preparation Examples 1 and 2 below, with melting points of 40°C and 38°C respectively.

It is also possible to use semi-crystalline polymers obtained by copolymerizing behenyl acrylate and acrylic acid or NVP, as described in US-A-5,519,063 and  
5 EP-A-550745, and more especially those described in polymer preparation Examples 3 and 4 below, with melting points of 60°C and 58°C respectively.

The low- and/or high-melting-point semi-crystalline  
10 polymers preferably do not contain a carboxyl group.

The other abovementioned combinations may comprise the combination of a rheological agent with an oil.

15 This rheological agent is capable of thickening and/or gelling the oil phase. It may be present in an amount which is effective for increasing the viscosity of this phase, particularly until a solid gel is obtained, namely a product which does not flow under its own  
20 weight.

This rheological agent is advantageously selected from lipophilic gelling agents, organic gellers and mixtures thereof.

25 The lipophilic gelling agent may be organic or mineral, polymeric or molecular.

As inorganic lipophilic gelling agent mention may be  
30 made of optionally modified clays, such as hectorites modified with a C<sub>10</sub> to C<sub>22</sub> fatty acid ammonium chloride, such as hectorite modified with distearyl-dimethylammonium chloride.

35 Mention may also be made of optionally surface-hydrophobicized pyrogenic silica whose particle size is less than 1 µm. It is possible in effect to modify chemically the surface of the silica, by a chemical

reaction which brings about a decrease in the number of silanol groups present on the surface of the silica. In particular it is possible to substitute the silanol groups by hydrophobic groups: in that case a  
5 hydrophobic silica is obtained. The hydrophobic groups may be:

- trimethylsiloxyl groups, obtained in particular by treating pyrogenic silica in the presence of hexamethyldisilazane. Silicas treated in this way are  
10 named "silica silylate" according to the CTFA (6th edition, 1995). They are sold, for example, under the names Aerosil R812® by Degussa and CAB-O-SIL TS-530® by Cabot.

- dimethylsilyloxyl or polydimethylsiloxane groups, obtained in particular by treating pyrogenic silica in the presence of polydimethylsiloxane or dimethyldichlorosilane. Silicas treated in this way are  
15 named "silica dimethyl silylate" according to the CTFA (6th edition, 1995). They are sold for example under the names Aerosil R972® and Aerosil R974® by Degussa  
20 and CAB-O-SIL TS-610® and CAB-O-SIL TS-720® by Cabot.

The hydrophobic pyrogenic silica preferably has a particle size which can be nanometric to micrometric,  
25 ranging for example from 5 to 200 nm approximately.

The polymeric organic lipophilic gelling agents are, for example, partly or completely crosslinked elastomeric organopolysiloxanes of three-dimensional  
30 structure, such as those sold under the names KSG6, KSG16 and KSG18 by Shin-Etsu, Trefil E-505C or Trefil E-506C by Dow-Corning, Gransil SR-CYC, SR DMF10, SR-DC556, SR 5CYC gel, SR DMF 10 gel, SR DC 556 gel from Grant Industries, SF 1204 and JK 113 by General  
35 Electric; ethylcellulose such as those sold under the name Ethocel by Dow Chemical; polyamides such as copolymers of a C<sub>36</sub> diacid condensed with ethylenediamine, with a weight-average molecular mass of

approximately 6000, such as the compounds sold by Arizona Chemical under the names Uniclear 80 and Uniclear 100, gums, especially silicone gums, such as PDMS having a viscosity > 100 000 centistokes, galactomannans containing from one to six and better still from two to four hydroxyl groups per saccharide unit, substituted by a saturated or unsaturated alkyl chain, such as guar gum alkylated with C<sub>1</sub> to C<sub>6</sub> alkyl chains and better still C<sub>1</sub> to C<sub>3</sub> alkyl chains, and mixtures thereof.

As preferred lipophilic gelling agent use is made of non-polymeric molecular organic gelling agents, also dubbed organic gellers, which are compounds whose molecules are capable of establishing, between themselves, physical interactions leading to self-aggregation of the molecules with formation of a 3D macromolecular network which is responsible for the gelation of the liquid fatty phase.

A "liquid fatty phase" in the sense of the invention is a fatty phase which is liquid at ambient temperature (25°C) and atmospheric pressure (760 mmHg or 105 Pa) and is composed of one or more fatty substances which are liquid at ambient temperature, also called oils, which are generally mutually compatible.

The macromolecular network may result from the formation of a network of fibrils (owing to stacking or aggregation of organic geller molecules), which immobilizes the molecules of the liquid fatty phase.

The ability to form this network of fibrils, and hence to gel, depends on the nature (or chemical class) of the organic geller, on the nature of the substituents carried by its molecules for a given chemical class, and on the nature of the liquid fatty phase.



The physical interactions are diverse but exclude co-crystallization. These physical interactions are, in particular, interactions such as self-complementary hydrogen interactions,  $\pi$  interactions between  
5 unsaturated rings, dipolar interactions, coordination bonds with organometallic derivatives, and combinations thereof. In general, each molecule of an organic geller can establish a number of types of physical interaction with a neighbouring molecule. Thus, advantageously, the  
10 molecules of the organic gellers according to the invention include at least one group capable of establishing hydrogen bonds and, better still, at least two groups capable of establishing hydrogen bonds, at least one aromatic ring, and better still at least two  
15 aromatic rings, at least one or more bonds with ethylenic unsaturation and/or at least one or more asymmetric carbons. The groups capable of forming hydrogen bonds are preferably selected from hydroxyl, carbonyl, amine, carboxylic acid, amide, urea and  
20 benzyl groups and combinations thereof.

The organic geller or gellers according to the invention are soluble in the liquid fatty phase after heating to give a transparent homogeneous liquid phase.  
25 They may be solid or liquid at ambient temperature and atmospheric pressure.

The molecular organic geller or gellers which can be used in the composition according to the invention are,  
30 in particular, those described in the document "Specialist Surfactants", edited by D. Robb, 1997, p. 209-263, Chapter 8 by P. Terech, European applications EP-A-1068854 and EP-A-1086945 or else application WO-A-02/47031.

35 Among these organic gellers mention may be made in particular of the amides of carboxylic acids, especially tricarboxylic acids, such as cyclohexane-

tricarboxamides (see European patent application EP-A-1068854), diamides having hydrocarbon chains each containing 1 to 22 carbon atoms, for example 6 to 18 carbon atoms, said chains being unsubstituted or substituted by at least one substituent selected from ester, urea and fluoro groups (see application EP-A-1086945), and in particular the diamides resulting from the reaction of diaminocyclohexane, in particular diaminocyclohexane in trans form, and an acid chloride such as, for example, N,N'-bis(dodecanoyl)-1,2-diaminocyclohexane, the amides of N-acylamino acids such as the diamides resulting from the action of an N-acylamino acid with amines containing 1 to 22 carbon atoms, such as, for example, those described in WO-93/23008, and especially the amides of N-acylglutamic acid in which the acyl group represents a C<sub>8</sub> to C<sub>22</sub> alkyl chain, such as N-lauroyl-L-glutamic acid dibutyl amide, manufactured or sold by Ajinomoto under the name GP-1, and mixtures thereof.

The compositions may contain from 10 to 60% of structuring agent. Preferably the composition contains from 15 to 50% by weight, better still from 20 to 40%, of structuring agent, which allows overall solids contents to be attained in the composition of > 45%, preferably > 46%, better still > 47%, even better > 48%, and even > 50% while maintaining a satisfactory consistency index < 1000 Pa, preferably between 1 and 900 Pa and better still between 10 and 800 Pa.

Conventional eye makeup compositions, such as mascaras, generally have a consistency index of this order of magnitude but for dry extracts which are less than 45% and often less than 40%; for example, between 30% and 40%; this limits the volumizing effect.

One example (A) of a structuring agent according to the invention, consisting of a semi-crystalline polymer in combination with an oil, is the following:

- 5 Fatty phase = mixture of polybutene/copolymer of stearyl acrylate and N-vinylpyrrolidone (40/60) with a melting point of 56°C.

- Fatty phase = polybutene(1)/stearyl acrylate-N-vinylpyrrolidone (40/60) copolymer (2) mixture with a  
10 melting point of 56°C.

(1): Indopol H 100 from AMOCO

- (2): Basic polymer with a melting point of 56°C,  
15 prepared in accordance with the following procedure.

- A 1 l reactor equipped with a central stirrer with anchor, a condenser and a thermometer is charged with  
20 120 g of cyclohexane, which is heated from the ambient temperature to 80°C over 45 min. At 80°C, over the course of 2 h, the following mixture C<sub>1</sub> is introduced:

- 40 g of cyclohexane + 4 g of Triganox 141 [2,5-bis(2-ethylhexanoylperoxy)-2,5-dimethylhexane].  
25

- 30 min after the beginning of the introduction of the mixture C<sub>1</sub>, the mixture C<sub>2</sub> is introduced, over 1 h 30 min, this mixture C<sub>2</sub> consisting of:

- 30 190 g of stearyl acrylate + 10 g of N-vinylpyrrolidone + 400 g of cyclohexane.

- After the two feeds the mixture is left to act for 3 h  
35 more at 80°C and then all of the cyclohexane present in the reaction mixture is distilled off under atmospheric pressure.

This gives the polymer with an active substance content of 100% by weight.

5 Its weight-average molecular mass  $M_w$  is 38 000, expressed in polystyrene equivalents, and its melting point  $T_f$  is 56°C as measured by DSC.

Tack = 2.63 N.s

Hardness = 5.84 MPa

10

Tack measurement protocol

15 The tack of the wax is measured at 20°C using the texturometre sold under the name TA-TX2i by Rheo, equipped with an acrylic polymer spindle in the shape of a cone forming an angle of 45°, by measuring the change in the force (compressive force or stretching force) (F) as a function of the time during the following operation:

20

25 The spindle is moved at a speed of 0.5 mm/s and then penetrates the wax to a depth of 2 mm. When the spindle has penetrated the wax to the depth of 2 mm, the spindle is held fixed for 1 second (corresponding to the relaxation time) and then withdrawn at a speed of 0.5 mm/s. During the relaxation time, the force (compressive force) decreases sharply to reach zero and then, during the withdrawal of the spindle, the force (stretching force) becomes negative before again  
30 increasing towards the value 0. The tack corresponds to the integral of the curve of force as a function of time for the portion of the curve corresponding to negative values of the force (stretching force). The value of the tack is expressed in N.s.

35

To carry out the measurement of the tack of the wax, the wax is melted at a temperature equal to the melting point of the wax + 10°C. The melted wax is poured into

a container 25 mm in diameter and 20 mm in depth. The wax is recrystallized at ambient temperature (25°C) for 24 hours such that the surface of the wax is flat and smooth, and then the wax is stored for at least 1 hour at 20°C before the tack measurement is carried out.

#### Hardness measurement protocol

The hardness of the wax is measured at 20°C using the texturometre sold under the name TA-TX2i by Rheo, equipped with a stainless steel spindle in the shape of a cylinder with a diameter of 2 mm, by measuring the change in the force (compressive force or stretching force) (F) as a function of the time during the following operation:

The spindle is moved at a speed of 0.1 mm/s and then penetrates the wax to a depth of 0.3 mm. When the spindle has penetrated the wax to the depth of 0.3 mm, the spindle is held fixed for 1 second (corresponding to the relaxation time) and then withdrawn at a speed of 0.1 mm/s. During the relaxation time, the force (compressive force) decreases sharply to reach zero and then, during the withdrawal of the spindle, the force (stretching force) becomes negative before again increasing towards the value 0. The hardness corresponds to the maximum compressive force measured between the surface of the spindle and the wax at the moment they are brought into contact. The value of this force is expressed in MPa.

To carry out the measurement of the hardness of the wax, the wax is melted at a temperature equal to the melting point of the wax + 20°C. The melted wax is poured into a container 30 mm in diameter and 20 mm in depth. The wax is recrystallized at ambient temperature (25°C) for 24 hours such that the surface of the wax is flat and smooth, and then the wax is stored for at

least 1 hour at 20°C before the hardness measurement is carried out.

Consistency index measurement protocol

5

The compositions according to the invention are characterized with the aid of the texture analyzer offered under the name TA-TX2i by Rheo.

- 10 The test consists in contacting a stainless steel cylindrical probe 12 mm in diameter with the product (a cylindrical container of diameter = 35 mm and depth = 15 mm filled with product, whose surface is levelled so as to obtain a thoroughly planar surface).

15

Measurement is repeated three times per product.

- The consistency index is measured during the contact phase of the probe with the product. This phase takes place with a constant displacement of 0.2 mm. The probe therefore sinks down into the product down to this depth of 0.2 mm at a rate of 10 mm/s. The force (or stress) measured at this point in time gives the consistency index (in Pa) of the product. The probe is then held in this position for one second.
- 20
- 25

Solids content measurement protocol

- This consists of a measurement of the dry extract of the mascara liquor, which is carried out on a Mettler Toledo HG 53 balance (halogen moisture analyzer).
- 30

- A sample of mascara (2-3 g) is deposited on an aluminium dish and subjected to a temperature of 120°C for 60 minutes. The measurement of the dry extract corresponds to the monitoring of the mass of the sample over time. The final solids content is therefore the percentage of the final mass (after 60 min) in relation
- 35

to the initial mass:  $DE = (\text{final mass}/\text{initial mass}) \times 100$ .

5 The composition according to the invention is a makeup composition, a makeup base, a "topcoat" composition to be applied over makeup, or a composition for the cosmetic treatment or care of keratin fibres.

10 The composition according to the invention is applied more particularly to the eyelashes. Consequently, the composition of the invention may be a composition for coating the eyelashes, in particular a composition for making up the eyelashes, also called mascara, a composition to be applied over eyelash makeup, also  
15 called topcoat, or else a composition for treating the eyelashes, in particular the eyelashes of human beings or false eyelashes. More especially, the composition is a mascara.

20 The composition according to the invention forms a physiologically acceptable medium.

In the present application, a "physiologically acceptable medium" is a non-toxic medium which is  
25 compatible with the keratin fibres of human beings, in particular the eyelashes or the eyebrows, such as a cosmetic medium, it being possible for the cosmetic medium to be a hydrophilic or lipophilic cosmetic medium.

30 The composition may comprise water and optionally one or more hydrophilic organic solvents, i.e. one or more water-miscible organic solvents, such as alcohols and especially monoalcohols having 2 to 5 carbon atoms,  
35 such as ethanol, isopropanol or n-propanol, polyols having 2 to 8 carbon atoms, such as glycerol, diglycerol, propylene glycol, ethylene glycol, 1,3-

butylene glycol, sorbitol, pentylene glycol, C<sub>3</sub>-C<sub>4</sub> ketones and C<sub>2</sub>-C<sub>4</sub> aldehydes.

5 The water or the mixture of water and hydrophilic organic solvent(s) may be present in the composition according to the invention in an amount ranging from 0.1% to 90% by weight, relative to the total weight of the composition, and preferably from 0.1% to 60% by weight.

10

The composition according to the invention may comprise at least one fatty compound which is paste-like at ambient temperature. A paste-like fatty substance in the sense of the invention is a fatty substance having 15 a melting point ranging from 20 to 55°C, preferably from 25 to 45°C, and/or a viscosity at 40°C ranging from 0.1 to 40 Pa.s (1 to 400 poises), preferably 0.5 to 25 Pa.s, measured on the Contraves TV or Rhéomat 80, equipped with a rotor rotating at 60 Hz. The skilled 20 worker is able to select the rotor which allows the viscosity to be measured, from the rotors MS-r3 and MS-r4, on the basis of his or her general knowledge, so as to be able to carry out measurement of the paste-like test compound.

25

These fatty substances are preferably hydrocarbon compounds, optionally of polymeric type; they may also be selected from silicone compounds; they may also be in the form of a mixture of hydrocarbon compounds 30 and/or silicone compounds. In the case of a mixture of different paste-like fatty substances it is preferred to use paste-like hydrocarbon compounds (containing primarily carbon atoms and hydrogen atoms and optionally ester groups) in majority proportion.

35

Among the paste-like compounds which can be used in the composition according to the invention, mention may be made of lanolins and lanolin derivatives such as



- acetylated lanolins or oxypropylenated lanolins or isopropyl lanolate having a viscosity of 18 to 21 Pa.s, preferably 19 to 20.5 Pa.s, and/or a melting point of 30 to 55°C, and mixtures thereof. It is also possible
- 5 to use esters of fatty alcohols or acids, particularly those having 20 to 65 carbon atoms (melting point of the order of 20 to 35°C and/or viscosity at 40°C ranging from 0.1 to 40 Pa.s) such as triisostearyl or cetyl citrate; arachidyl propionate; polyvinyl laurate;
- 10 cholesterol esters such as triglycerides of plant origin, such as hydrogenated vegetable oils, viscous polyesters such as poly(12-hydroxystearic) acid, and mixtures thereof.
- 15 Mention may also be made of silicone paste-like fatty substances such as polydimethylsiloxanes (PDMS) having pendant chains of the alkyl or alkoxy type having 8 to 24 carbon atoms, and a melting point of 20-55°C, such as stearyl dimethicones, especially those sold by Dow
- 20 Corning under the trade names DC2503 and DC25514, and mixtures thereof.

- The paste-like fatty substance may be present in the composition according to the invention in an amount
- 25 ranging from 0.01 to 60% by weight relative to the total weight of the composition, preferably ranging from 0.5 to 45% by weight, and better still ranging from 2% to 30% by weight, in the composition.

- 30 The composition according to the invention may comprise emulsifying surfactants, present in particular in a proportion ranging from 2 to 30% by weight relative to the total weight of the composition, and better still from 5% to 15%. These surfactants may be selected from
- 35 anionic surfactants or non-ionic surfactants. Reference may be made to Encyclopedia of Chemical Technology, Kirk-Othmer, Volume 22, pp. 333-432, 3rd edition, 1979, Wiley, for the definition of the properties and

functions (emulsifier) of the surfactants, in particular to pp. 347-377 of this reference, for anionic and non-ionic surfactants.

- 5 The surfactants used preferentially in the composition according to the invention are selected:
- from non-ionic surfactants: fatty acids, fatty alcohols, polyethoxylated or polyglycerolated fatty alcohols such as polyethoxylated stearyl or  
10 cetylstearyl alcohols, esters of fatty acid and sucrose, esters of alkyl glucose, in particular polyoxyethylenated fatty C<sub>1</sub>-C<sub>6</sub> alkyl glucose esters, and mixtures thereof.
  - from anionic surfactants: C<sub>16</sub>-C<sub>30</sub> fatty acids  
15 neutralized with amines, aqueous ammonia or alkali metal salts, and mixtures thereof.

Preference is given to using surfactants which allow an oil-in-water or wax-in-water emulsion to be obtained.

20

The composition according to the invention may comprise at least one film-forming polymer.

- 25 The film-forming polymer may be present in the composition according to the invention in an amount, in terms of dry material, ranging from 0.1% to 60% by weight relative to the total weight of the composition, preferably from 0.5% to 40% by weight, and better still from 1% to 30% by weight.

30

- In the present application, the term "film-forming polymer" refers to a polymer which is capable, by itself or in the presence of an auxiliary film-forming agent, of forming a continuous and adherent film on a  
35 support, in particular on keratin materials such as the eyelashes.

Among the film-forming polymers which may be used in the composition of the present invention, mention may be made of synthetic polymers, of free-radical type or of polycondensate type, and of polymers of natural  
5 origin, and mixtures thereof.

The term "free-radical film-forming polymer" refers to a polymer obtained by polymerizing monomers containing unsaturation, in particular ethylenic unsaturation,  
10 each monomer being capable of undergoing homopolymerization (unlike polycondensates).

The film-forming polymers of free-radical type may in particular be vinyl polymers or copolymers, especially  
15 acrylic polymers.

The vinyl film-forming polymers may result from the polymerization of monomers containing ethylenic unsaturation and having at least one acidic group  
20 and/or of esters of these acidic monomers and/or of amides of these acidic monomers.

As acid-group-bearing monomer it is possible to use  $\alpha,\beta$ -ethylenic unsaturated carboxylic acids such as  
25 acrylic acid, methacrylic acid, crotonic acid, maleic acid and itaconic acid. It is preferred to use (meth)acrylic acid and crotonic acid, and more preferably (meth)acrylic acid.

The esters of acidic monomers are advantageously selected from esters of (meth)acrylic acid (also called (meth)acrylates), in particular alkyl (meth)acrylates, especially  $C_1-C_{30}$ , preferably  $C_1-C_{20}$ , alkyl  
30 (meth)acrylates, aryl (meth)acrylates, especially  $C_6-C_{10}$  aryl (meth)acrylates, and hydroxyalkyl (meth)acrylates,  
35 in particular  $C_2-C_6$  hydroxyalkyl (meth)acrylates.

Among alkyl (meth)acrylates mention may be made of methyl methacrylate, ethyl methacrylate, butyl methacrylate, isobutyl methacrylate, 2-ethylhexyl methacrylate, lauryl methacrylate and cyclohexyl methacrylate.

Among hydroxyalkyl (meth)acrylates mention may be made of hydroxyethyl acrylate, 2-hydroxypropyl acrylate, hydroxyethyl methacrylate, and 2-hydroxypropyl methacrylate.

Among aryl (meth)acrylates mention may be made of benzyl acrylate and phenyl acrylate.

Particularly preferred esters of (meth)acrylic acid are alkyl (meth)acrylates.

According to the present invention the alkyl group of the esters can be either fluorinated or perfluorinated: in other words, some or all of the hydrogen atoms of the alkyl group are substituted by fluorine atoms.

Possible examples of amides of acidic monomers include (meth)acrylamides, and especially N-alkyl-(meth)acrylamides, particularly where the alkyl is  $C_2-C_{12}$ . Among N-alkyl(meth)acrylamides mention may be made of N-ethylacrylamide, N-t-butylacrylamide, N-t-octylacrylamide and N-undecylacrylamide.

The vinyl film-forming polymers may also result from the homopolymerization or copolymerization of monomers selected from vinyl esters and styrenic monomers. In particular these monomers can be polymerized with acidic monomers and/or their esters and/or their amides, such as those mentioned hitherto.

Possible examples of vinyl esters include vinyl acetate, vinyl neodecanoate, vinyl pivalate, vinyl benzoate and vinyl t-butyl benzoate.

- 5 Styrenic monomers include styrene and alpha-methylstyrene.

- 10 Film-forming polycondensates include polyurethanes, polyesters, polyester amides, polyamides, epoxy ester resins and polyureas.

- 15 Polyurethanes may be selected from anionic, cationic, non-ionic or amphoteric polyurethanes, acrylic polyurethanes, polyurethane-polyvinylpyrrolidones, polyester-polyurethanes, polyether-polyurethanes, polyureas, polyurea-polyurethanes, and mixtures thereof.

- 20 Polyesters may be obtained conventionally by polycondensation of dicarboxylic acids with polyols, especially diols.

- 25 The dicarboxylic acid may be aliphatic, alicyclic or aromatic. Possible examples of such acids include oxalic acid, malonic acid, dimethylmalonic acid, succinic acid, glutaric acid, adipic acid, pimelic acid, 2,2-dimethylglutaric acid, azelaic acid, suberic acid, sebacic acid, fumaric acid, maleic acid, itaconic acid, phthalic acid, dodecanedioc acid, 1,3-cyclohexanedicarboxylic acid, 1,4-cyclohexanedicarboxylic acid, isophthalic acid, terephthalic acid, 2,5-norbornanedicarboxylic acid, diglycolic acid, thiodipropionic acid, 2,5-naphthalenedicarboxylic acid, 2,6-naphthalenedicarboxylic acid. These dicarboxylic acid monomers may be used alone or in a combination of at least two dicarboxylic acid monomers. Among these monomers it is preferred to select phthalic acid, isophthalic acid and/or terephthalic acid.
- 30
- 35

The diol may be selected from aliphatic, alicyclic and aromatic diols. It is preferred to use a diol selected from ethylene glycol, diethylene glycol, triethylene glycol, 1,3-propanediol, cyclohexane dimethanol and 1,4-butanediol. As other polyols it is possible to use glycerol, pentaerythritol, sorbitol and trimethylol-propane.

- 10 The polyester amides may be obtained in a similar way to the polyesters, by polycondensation of diacids with diamines or amino alcohols. As a diamine it is possible to use ethylenediamine, hexamethylenediamine, meta- or para-phenylenediamine. As an amino alcohol it is possible to use monoethanolamine.

The polyester may further comprise at least one monomer which carries at least one group  $-SO_3M$ , with M representing a hydrogen atom, an ammonium ion  $NH_4^+$  or a metal ion, such as, for example, an  $Na^+$ ,  $Li^+$ ,  $K^+$ ,  $Mg^{2+}$ ,  $Ca^{2+}$ ,  $Cu^{2+}$ ,  $Fe^{2+}$  or  $Fe^{3+}$  ion. It is possible to use in particular a difunctional aromatic monomer containing such a group  $-SO_3M$ .

- 25 The aromatic nucleus of the difunctional aromatic monomer additionally carrying a group  $-SO_3M$  as described above may be selected, for example, from benzene, naphthalene, anthracene, biphenyl, oxy-biphenyl, sulphonylbiphenyl and methylenebiphenyl nuclei. As examples of a difunctional aromatic monomer further carrying a group  $-SO_3M$ , mention may be made of the following: sulphoisophthalic acid, sulpho-terephthalic acid, sulphophthalic acid and 4-sulpho-naphthalene-2,7-dicarboxylic acid.

- 35 Preference is given to using copolymers based on isophthalate/sulphoisophthalate, and more particularly copolymers obtained by condensing diethylene glycol,

cyclohexanedimethanol, isophthalic acid and/or sulphoisophthalic acid.

5 The optionally modified polymers of natural origin may be selected from shellac resin, gum sandarac, dammars, elemis, copals, cellulosic polymers, and mixtures thereof.

10 In accordance with a first embodiment of the composition according to the invention, the film-forming polymer may be a water-soluble polymer and may be present in an aqueous phase of the composition; the polymer is therefore solubilized in the aqueous phase of the composition. Possible examples of water-soluble  
15 film-forming polymers include:

- proteins such as proteins of plant origin, such as wheat proteins and soya proteins; proteins of animal origin such as keratins, for example keratin hydrolysates and sulphonic keratins;
- 20 - cellulose polymers such as hydroxyethylcellulose, hydroxypropylcellulose, methylcellulose, ethylhydroxyethylcellulose and carboxymethylcellulose, and quaternized cellulose derivatives;
- acrylic polymers or copolymers, such as  
25 polyacrylates or polymethacrylates;
- vinyl polymers, such as polyvinylpyrrolidones, copolymers of methyl vinyl ether and malic anhydride, the copolymer of vinyl acetate and crotonic acid, copolymers of vinylpyrrolidone and vinyl acetate;  
30 copolymers of vinylpyrrolidone and caprolactam; and polyvinyl alcohol;
- polymers of natural origin, optionally modified, such as:
  - gums arabic, guar gum, xanthan derivatives and  
35 karaya gum;
  - alginates and carragheenans;
  - glycoaminoglycans and hyaluronic acid and its derivatives;

- shellac resin, gum sandarac, dammars, elemis and copals;
  - deoxyribonucleic acid;
  - mucopolysaccharides such as chondroitin sulphates,
- 5 and mixtures thereof.

In accordance with another variant embodiment of the composition according to the invention, the film-forming polymer may be a polymer which is solubilized  
10 in a liquid fatty phase comprising oils or organic solvents such as those described hitherto (in which case the film-forming polymer is referred to as a fat-soluble polymer). A "liquid fatty phase" for the purposes of the invention is a fatty phase which is  
15 liquid at ambient temperature (25°C) and atmospheric pressure (760 mmHg or 10<sup>5</sup> Pa), which is composed of one or more fatty substances which are liquid at ambient temperature, also called oils, which are generally compatible with one another.

20 The liquid fatty phase preferably comprises a volatile oil, optionally in a mixture with a non-volatile oil, the oils being selectable from the abovementioned oils.

25 Possible examples of fat-soluble polymers include vinyl ester copolymers (the vinyl group being connected directly to the oxygen atom of the ester group and the vinyl ester having a saturated, linear or branched hydrocarbon radical of 1 to 19 carbon atoms which is  
30 linked to the carbonyl of the ester group) with at least one other monomer which may be a vinyl ester (other than the vinyl ester already present), an  $\alpha$ -olefin (having 8 to 28 carbon atoms), an alkyl vinyl ether (in which the alkyl group contains 2 to 18 carbon  
35 atoms) or an allyl or methallyl ester (having a saturated, linear or branched hydrocarbon radical of 1 to 19 carbon atoms which is linked to the carbonyl of the ester group).



These copolymers may be crosslinked by means of crosslinkers which can be either of vinyl type or of allyl or methallyl type, such as tetraallyloxyethane, 5 divinylbenzene, divinyl octanedioate, divinyl dodecanedioate and divinyl octadecanedioate.

As examples of these copolymers mention may be made of the following copolymers: vinyl acetate/allyl stearate, 10 vinyl acetate/vinyl laurate, vinyl acetate/vinyl stearate, vinyl acetate/octadecene, vinyl acetate/octadecyl vinyl ether, vinyl propionate/allyl laurate, vinyl propionate/vinyl laurate, vinyl stearate/1-octadecene, vinyl acetate/1-dodecene, vinyl 15 stearate/ethyl vinyl ether, vinyl propionate/cetyl vinyl ether, vinyl stearate/allyl acetate, vinyl 2,2-dimethyloctanoate/vinyl laurate, allyl 2,2-dimethylpentanoate/vinyl laurate, vinyl dimethylpropionate/vinyl stearate, allyl dimethylpropionate/ 20 vinyl stearate, vinyl propionate/vinyl stearate, crosslinked with 0.2% of divinylbenzene, vinyl dimethylpropionate/vinyl laurate, crosslinked with 0.2% of divinylbenzene, vinyl acetate/octadecyl vinyl ether, crosslinked with 0.2% of tetraallyloxyethane, vinyl 25 acetate/allyl stearate, crosslinked with 0.2% of divinylbenzene, vinyl acetate/1-octadecene crosslinked with 0.2% of divinylbenzene, and allyl propionate/allyl stearate crosslinked with 0.2% of divinylbenzene.

30 Fat-soluble film-forming polymers also include fat-soluble homopolymers, and in particular those resulting from the homopolymerization of vinyl esters having 9 to 22 carbon atoms or alkyl acrylates or methacrylates, the alkyl radicals having 10 to 20 carbon atoms.

35 Fat-soluble homopolymers of this kind may be selected from polyvinyl stearate, polyvinyl stearate crosslinked using divinylbenzene, diallyl ether or diallyl

phthalate, polystearyl (meth)acrylate, polyvinyl laurate, polylauryl (meth)acrylate, it being possible for these poly (meth)acrylates to be crosslinked using ethylene glycol dimethacrylate or tetraethylene glycol dimethacrylate.

The fat-soluble homopolymers and copolymers defined above are known and are described in particular in the application FR-A-2232303; they can have a weight-average molecular weight ranging from 2000 to 500 000 and preferably from 4000 to 200 000.

As fat-soluble film-forming polymers which can be used in the invention, mention may also be made of polyalkylenes and especially the copolymers of C<sub>2</sub>-C<sub>20</sub> alkenes, such as polybutene, alkylcelluloses with a linear or branched, saturated or unsaturated C<sub>1</sub> to C<sub>8</sub> alkyl radical such as ethylcellulose and propylcellulose, vinylpyrrolidone (VP) copolymers and especially the copolymers of vinylpyrrolidone and of C<sub>2</sub> to C<sub>40</sub> or, better still, C<sub>3</sub> to C<sub>20</sub> alkene. Possible examples of VP copolymers which can be used in the invention include VP/vinyl acetate, VP/ethyl methacrylate, butylated polyvinylpyrrolidone (PVP), VP/ethyl methacrylate/methacrylic acid, VP/eicosene, VP/hexadecene, VP/triacontene, VP/styrene and VP/acrylic acid/lauryl methacrylate copolymer.

The composition according to the invention may comprise a plasticizer which promotes the formation of a film with the film-forming polymer. Such a plasticizer may be selected from all compounds known to the person skilled in the art as being capable of fulfilling the desired function.

The composition according to the invention may also comprise a dyestuff such as pulverulant dyestuffs, fat-soluble colorants or water-soluble colorants. This

dyestuff may be present in an amount ranging from 0.01% to 30% by weight, relative to the total weight of the composition.

- 5 The pulverulent dyestuffs may be selected from pigments and nacres.

The pigments can be white or coloured, mineral and/or organic, and coated or uncoated. Among mineral  
10 pigments, mention may be made of titanium dioxide, optionally surface-treated, zirconium oxide, zinc oxide or cerium oxide, and also iron oxide or chromium oxide, manganese violet, ultramarine blue, chromium hydrate and ferric blue. Among organic pigments, mention may be  
15 made of carbon black, pigments of D & C type, and lacs based on cochineal carmine, barium, strontium, calcium and aluminium.

The nacres may be selected from white nacreous pigments  
20 such as mica coated with titanium or with bismuth oxychloride, coloured nacreous pigments such as titanium mica with iron oxides, titanium mica with, in particular, ferric blue or chromium oxide, titanium mica with an organic pigment of the type mentioned  
25 above, and also nacreous pigments based on bismuth oxychloride.

The fat-soluble colorants are, for example, Sudan red, D&C Red 17, D&C Green 6,  $\beta$ -carotene, soya oil, Sudan  
30 Brown, D&C Yellow 11, D&C Violet 2, D&C Orange 5, quinoline yellow and annatto. The water-soluble colorants are, for example, beetroot juice, methylene blue, the disodium salt of ponceau, the disodium salt of alizarin green, quinoline yellow, the trisodium salt  
35 of amaranth, the disodium salt of tartrazine, the monosodium salt of rhodamine, the disodium salt of fuchsin, and xanthophyll.

neutralizing agents, thickeners, vitamins, and the mixtures thereof.

5 Of course, the person skilled in the art will take care to select the possible additional additives and/or the amount thereof in such a way that the advantageous properties of the composition according to the invention are not, or are not substantially, adversely affected by the intended addition.

10

The composition according to the invention may be manufactured by the known processes which are generally used in the cosmetics field.

15 The invention also relates to a cosmetic process for treating or making up keratin fibres, comprising the application to said keratin fibres of the composition as described above.

20 The invention also relates to a process for coating the eyelashes, comprising the application to the eyelashes of the composition described above.

25 The invention also relates to the use of the composition, as described above, for making up keratin fibres and also to the use of this composition for obtaining easy and homogeneous application and makeup which exhibits an excellent volumizing and separating effect.

30

The invention will now be described with reference to the following examples, which are given by way of nonlimiting illustration.

EXAMPLES

Several mascara compositions were prepared and characterized according to the invention.

5

The formulations according to the invention are formulations of the fatty phase/water emulsion type which are generally defined in the following way:

10	Fatty phase	x%
	Stearic acid	5.82%
	Neutralizing agents	2.9%
	Black iron oxide	8%
	Hydroxyethylcellulose	0.91%
15	Gum arabic	3.45%
	Additives, preservatives, water	qs

Described in the table below in Example 1 is a composition according to the invention, whose solids content and consistency index were measured.

20

Also indicated in this table, for comparison, are the solids contents and the consistency indices of 2 prior art compositions.

25

Table

Test	Solids content (%)	Consistency (Pa)	Type of fatty phase	% fatty phase = x
No. 1 according to the invention	56.8	490	Mixture of polybutene/copolymer of stearyl acrylate and N-vinylpyrrolidone (40/60) (described above - Example A)	35
Comparative	28.6	/	Without waxes	0

Weightless Volume wax free mascara				
Comparative Volum Express	39	2030	/	
Comparative Intencils	41.3	570	/	/

The Volum Express mascara is sold commercially under the trade mark Maybelline as a volumizing mascara.

- 5 The Intencils mascara is sold commercially under the trade mark Lancôme as a volumizing mascara.

- The Weightless Volume wax free mascara is sold commercially under the trade mark Neutrogena as a wax-free volumizing mascara.
- 10

- The table above shows that only the compositions of the invention, although they contain no wax, exhibit a high or even very high solids content in tandem with a low consistency.
- 15

They make it possible to make up the eyelash homogeneously and rapidly while adding volume.

CLAIMS

1. Cosmetic composition for making up or caring for keratin fibres, which does not contain waxes and which has a solids content defined by a dry solids extract of greater than 45% by weight.
2. Composition according to Claim 1, which has a consistency index of less than 1000 Pa.
3. Composition according to Claim 1, having a dry solids extract of greater than 46% by weight, preferably greater than 47% by weight, more preferably greater than 48% by weight, and better still greater than 50% by weight.
4. Composition according to any one of the preceding claims, having a consistency index of from 1 to 900, preferably from 10 to 800.
5. Composition according to any one of the preceding claims, comprising at least one fatty phase comprising at least one structuring agent.
6. Composition according to Claim 5, in which the fatty phase represents from 10 to 60%, preferably from 15 to 50%, more preferably from 20 to 40% of the total weight of the composition.
7. Composition according to Claim 5, in which the structuring agent has a tack value  $\geq 0.1$  N.s, in particular from 0.1 to 30 N.s; preferably  $\geq 0.5$  N.s, in particular from 0.5 N.s to 20 N.s; better still  $\geq 0.8$  N.s, in particular from 0.8 to 10 N.s; and even better still  $\geq 1$ , in particular from 1 to 5 N.s.

8. Composition according to Claim 5, in which the structuring agent has a hardness value  $\leq 30$  MPa, in particular between 0.01 and 30 MPa; preferably between 0.05 and 25 MPa; better still between 0.1 and 20 MPa.
9. Composition according to Claim 5, in which the structuring agent consists of the combination of a specific compound and at least one oil.
10. Composition according to Claim 9, in which the specific compound is selected from semi-crystalline polymers; fatty-phase rheological agents, such as polyamide-type polymers and hydrophobic silicas; and mixtures thereof.
11. Composition according to Claim 10, in which the semi-crystalline polymers are selected from polyacrylates which are modified by an alkyl chain, are solid at ambient temperature and have a melting point of more than 30°C and less than 150°C.
12. Composition according to Claim 11 or Claim 9, in which the oil is selected from volatile and non-volatile hydrocarbon oils, silicone oils and/or fluoro oils, and mixtures thereof.
13. Composition according to any one of Claims 9 to 12, in which the oil has a molecular mass of greater than or equal to 250 g/mol, in particular between 250 and 10 000 g/mol, preferably greater than or equal to 300 g/mol, in particular between 300 and 8000 g/mol, and better still greater than or equal to 400 g/mol, in particular between 400 and 5000 g/mol.



14. Composition according to any one of Claims 9 to 13, in which, in the fatty phase, the ratio of the oil(s) to the specific compound(s) is from 10/90 to 90/10, preferably from 20/80 to 80/20 and more preferably from 30/70 to 70/30.
15. Composition according to any one of the preceding claims, which is an anhydrous composition.
16. Composition according to any one of Claims 1 to 14, comprising water or a mixture of water and hydrophilic organic solvent(s).
17. Composition according to Claim 10, in which the hydrophilic organic solvent(s) is (are) selected from monoalcohols having 2 to 5 carbon atoms, polyols having 2 to 8 carbon atoms, C<sub>3</sub>-C<sub>4</sub> ketones and C<sub>2</sub>-C<sub>4</sub> aldehydes.
18. Composition according to either one of Claims 16 and 17, in which the water or the mixture of water and hydrophilic organic solvent(s) is present in an amount ranging from 0.1% to 90% by weight, relative to the total weight of the composition, and preferably from 0.1% to 60% by weight.
19. Composition according to any one of the preceding claims, characterized in that it comprises a film-forming polymer.
20. Composition according to Claim 19, in which the film-forming polymer is selected from the group made up of vinyl polymers, polyurethanes, polyesters, polyamides, polyureas and cellulosic polymers.
21. Composition according to Claim 20, in which the film-forming polymer is present in an amount, in

terms of dry polymer material, ranging from 0.1% to 60% by weight relative to the total weight of the composition, preferably from 0.5% to 40% by weight, and better still from 1% to 30% by weight.

- 5
22. Composition according to any one of the preceding claims, characterized in that it comprises a dyestuff.
- 10 23. Composition according to Claim 22, in which the dyestuff is selected from pigments, nacles, fat-soluble colorants and water-soluble colorants.
- 15 24. Composition according to Claim 22 or Claim 23, in which the dyestuff is present in an amount ranging from 0.01% to 30% by weight, relative to the total weight of the composition.
- 20 25. Composition according to any one of the preceding claims, characterized in that it comprises a cosmetic additive selected from antioxidants, fillers, preservatives, fragrances, neutralizing agents, thickeners, surfactants, cosmetic or dermatological active agents, plasticizers, 25 coalescents, and mixtures thereof.
- 30 26. Composition according to any one of the preceding claims, which is a makeup composition, a makeup base, a "topcoat" composition to be applied over makeup, or a composition for treating or caring for keratin fibres.
- 35 27. Composition according to any one of the preceding claims, which is a composition for coating the eyelashes, in particular a composition for making up the eyelashes, also called mascara, a composition to be applied over eyelash makeup, also called topcoat, or else a composition for

treating the eyelashes, in particular the eyelashes of human beings or false eyelashes.

- 5           28. Composition according to Claim 27, which is a mascara.
- 10           29. Cosmetic process for treating or making up keratin fibres, comprising the application to said keratin fibres of a composition according to any one of Claims 1 to 28.
- 15           30. Process for coating the eyelashes, comprising the application to the eyelashes of a composition according to any one of Claims 1 to 28.
31. Use of a composition according to any one of Claims 1 to 28, for making up keratin fibres.
- 20           32. Use of a composition according to any one of Claims 1 to 28, for obtaining easy and homogeneous application and makeup which exhibits an excellent volumizing and separating effect.

**WAX-FREE COSMETIC COMPOSITION FOR MAKING UP OR CARING  
FOR KERATIN FIBRES**

DESCRIPTION

5

The present invention relates to a cosmetic composition for making up or caring for keratin fibres which does not contain waxes.

10 The invention also relates to the use of this composition for making up keratin fibres, in particular the eyelashes, eyebrows and hair, and also to a process for making up or cosmetically caring for said fibres.

15 The makeup process and composition according to the invention are more particularly intended for keratin fibres, in particular substantially longitudinal keratin fibres, of human beings, such as the eyelashes, the eyebrows and the hair, including false eyelashes;  
20 preferably, the makeup process and composition according to the invention are intended for the eyelashes.

The composition may be a makeup composition, a makeup  
25 base, a composition to be applied over a makeup, also called "topcoat", or else a composition for the cosmetic treatment or care of keratin fibres. More particularly, the invention relates to a composition which may be defined as an eye makeup composition, such  
30 as a mascara.

Eye makeup compositions, and in particular eyelash makeup compositions, such as mascaras, may be in various forms: for example, in the form of two-phase  
35 oil-in-water or O/W emulsions or water-in-oil W/O emulsions, of aqueous or anhydrous dispersions.

These compositions are characterized by their solids content, which is provided in part by a dispersed fatty phase consisting, for example, of one or more waxes for the purpose of bringing substance to the eyelashes and hence obtaining a volumizing makeup result.

It is known from the prior art that the greater the increase in solids content in a composition, the greater the deposition of substance on the eyelash and hence the more volumizing the result obtained will be.

However, increasing the solids content, i.e. most commonly the amount of waxes in a composition, such as an emulsion or dispersion, leads to an increase in the consistency of the product obtained, with the consequence that application to the eyelashes is tricky and difficult since the product is thick and viscous; it goes on with difficulty, heterogeneously and in lumps.

The increase in solids content is therefore often limited by the increase in consistency and does not exceed 45% of the total weight of the composition.

This limitation on the solids content is often linked to the impossibility of increasing the wax content in the fatty phase, which does not exceed 25% for reasons of feasibility; and, between 20% and 25% by weight of wax, the compositions are often very thick, compact and difficult to apply and exhibit unsatisfactory cosmetic properties.

This is generally the case with what are termed volumizing mascaras, which are difficult to apply and give a heterogeneous makeup result.

Another means of increasing the solids content is to incorporate solid particles such as fillers or

5 pigments, but the increase in consistency again limits the maximum percentage of solids; furthermore, the use of solid particles in a large amount is detrimental to smooth and homogeneous deposition, owing not only to the consistency but also to the size of the particles introduced, giving a rough, granular appearance to the deposit.

10 Conversely, it is possible to formulate compositions which are of low consistency and are easy to apply, but the wax content is then low, giving rise to unsatisfactory makeup effect.

15 Wax-free eye makeup compositions have also already been described. They are generally based on the use of film-forming polymers; however, it is not possible to formulate them at high solids contents since either the consistency increases sharply, in the case of soluble polymers, or the solids content is limited due to the  
20 fact that the compositions are in the form of aqueous or anhydrous dispersions or emulsions.

It is therefore not possible to obtain a composition for making up keratin fibres, in particular an "eye  
25 makeup" composition, which is devoid of waxes which comprise a high solids content. Another advantage is to be able to obtain compositions which preferably have a low consistency for easy and homogeneous application in conjunction with a satisfactory volumizing and  
30 separating effect.

There is therefore a need for a wax-free cosmetic composition for making up keratin fibres which has a high solids content while exhibiting, preferably  
35 retaining, a low consistency index.

There is also a need for a cosmetic composition for making up keratin fibres, for example an eye makeup

composition, such as a mascara, which is devoid of waxes and which exhibits excellent application properties at the time of its application, i.e. which allows in particular an easy and homogeneous application and which at the same time also provides excellent results with regard to the final makeup result, in particular a good volumizing effect. The aim of the invention is to provide a cosmetic composition for making up or caring for keratin fibres which meets, inter alia, these needs.

The aim of the invention is also to provide a composition for making up or caring for keratin fibres, such as a mascara composition, which solves the problems of the prior art compositions and which does not have the drawbacks, limitations, deficiencies and disadvantages of the prior art compositions.

This aim, along with others, is achieved in accordance with the invention by means of a cosmetic composition for making up or caring for keratin fibres which does not contain waxes and which has a solids content defined by a dry solids extract of greater than 45% by weight.

The compositions according to the invention, surprisingly, although containing no wax, have a high solids content, i.e. greater than 45% by weight, which the prior art compositions have never been able to obtain without waxes being incorporated therein.

Another advantage provided by the absence of waxes is that it further promotes the smooth, homogeneous and non-granular appearance of the deposit, while thereby allowing the solids content to be increased still further, since the influence of the waxes on the consistency does not arise.

Advantageously, the composition according to the invention has a consistency of less 1000 Pa.

Thus, the wax-free compositions according to the invention advantageously exhibit a combination of a high solids content, i.e. greater than 45% by weight, and a low consistency index, i.e. less than 1000 Pa, which has never been described or suggested in the prior art.

10

The consistency index is a parameter which allows an account to be given of the overall consistency of the product.

15 Due to the high overall solids content in the final composition and, advantageously, a satisfactory low consistency index, generally of the order of that of known prior art mascaras, or even less than that of known mascaras, an easy application and homogeneous deposition, in tandem with a satisfactory volumizing and separating effect, are obtained.

20

In other words, when the consistency is less than 1000 Pa, the composition according to the invention makes it possible, for the first time, as a result of the combination of two specific parameters, each lying within a specific range, to combine excellent application properties of the composition with excellent properties of deposition of the makeup obtained with this composition.

25

30

The compositions according to the invention solve the problems of the prior art compositions and do not exhibit the deficiencies, limitations and disadvantages of the prior art compositions.

35

In particular, the compositions of the invention overcome the widespread prejudice in the prior art



according to which it was impossible to obtain a makeup composition, in particular an eye makeup composition, which was both devoid of waxes and had a high solids content.

5

When the consistency of the composition according to the invention is less than 1000 Pa, the compositions according to the invention also overcome the prejudice according to which it was impossible to obtain a wax-free makeup composition having a high solids content and, at the same time, a satisfactory consistency for easy and homogeneous application combined with a satisfactory volumizing and separating effect.

15 In addition, the composition according to the invention is stable, even over a long period of time, and homogeneous. Advantageously, the dry solids extract is greater than 46% by weight, preferably greater than 47% by weight, more preferably greater than 48% by weight and better still greater than 50% by weight. In particular, the dry extract of the composition is less than 85% by weight, preferably less than 75%, and better still less than 65%.

25 According to the invention, the higher the solids content, defined by the dry solids extract, the greater the volumizing effect, while application still remains easy and the deposition homogeneous, even at such high solids contents.

30

The consistency index is advantageously from 1 to 900, preferably from 10 to 800; within these preferred ranges, the application properties are further improved and are always in tandem with an enhanced volumizing effect, and even a likewise enhanced separating effect.

35

Advantageously, the composition according to the invention comprises at least one fatty phase comprising

at least one particular, specific structuring agent which may, surprisingly, be incorporated into the composition, even at very high contents, which may range, for example, up to 60% by weight of the composition without substantially increasing the consistency index or causing the composition to solidify.

It is completely surprising that the use of the specific structuring agent according to the invention, instead of the waxes used in the prior art, does not cause any increase in consistency and therefore makes it possible to obtain overall solids contents which are much higher than in the prior art.

The fatty phase may form a continuous phase of the combination. In particular, the composition according to the invention may be anhydrous.

The total fatty phase of the composition may represent from 10 to 60%, preferably from 15 to 50%, more preferably from 20 to 40% of the total weight of the composition.

The incorporation of a specific structuring agent of this kind in part or in whole into the fatty phase is possible without greatly increasing the consistency index and it is therefore possible, by virtue of these specific structuring agents, to attain solids contents of greater than 45% - much higher than in the prior art, without employing waxes.

The incorporation of this specific structuring agent into the fatty phase of the composition makes it possible, surprisingly, to obtain a high solids content advantageously combined with a satisfactory consistency and therefore to obtain the combination of an easy and

homogeneous application with a satisfactory thickening and separating effect.

In other words, it has been possible according to the invention, without having recourse to waxes, to obtain compositions which are stable and homogeneous with a dry solids extract of greater than 45%, by using a specific structuring agent. Advantageously, it has been possible, moreover, surprisingly to obtain a consistency index of less than 1000 Pa.

Said structuring agent is defined by given tack and hardness properties.

Said structuring agent is characterized by:

- a tack value  $\geq 0.1$  N.s, in particular from 0.1 to 30 N.s; preferably  $\geq 0.5$  N.s, in particular from 0.5 N.s to 20 N.s; better still  $\geq 0.8$  N.s, in particular from 0.8 to 10 N.s; and even better still  $\geq 1$ , in particular from 1 to 5 N.s;
- a hardness value  $\leq 30$  MPa, in particular between 0.01 and 30 MPa; preferably between 0.05 and 25 MPa; better still between 0.1 and 20 MPa.

Another possible advantage of using this specific structuring agent in the compositions of the invention is that it also allows improved attachment to the keratin material, such as the eyelash, in a manner which is homogeneous and rapid, owing to its optionally tacky character.

It has been found that the incorporation of such an agent, defined by specific values of certain parameters, into the fatty phase of the composition of the invention made it possible precisely to obtain high solids contents without waxes, optionally in combination with the desired low consistencies, and

consequently to obtain the combination of desired properties and effects.

5 The structuring agent(s) may preferably be selected from combinations of a specific compound with at least one oil.

10 The specific compound may be selected from semi-crystalline polymers; fatty-phase rheological agents, such as polyamide-type polymers and hydrophobic silicas; and mixtures thereof.

15 It is specified that, according to the invention, in the case of the combinations of the specific compound with an oil, the term "oil" refers to a fatty substance which is liquid at ambient temperature.

20 The oils may be hydrocarbon oils and/or silicone oils and/or fluoro oils. These oils may be of animal, vegetable, mineral or synthetic origin. By "hydrocarbon oil" is meant an oil containing primarily carbon and hydrogen atoms and optionally one or more functional groups selected from hydroxyl, ester, ether and carboxylic functional groups. By way of example of oils  
25 that can be used in the invention, mention may be made of:

- hydrocarbon oils of animal origin such as perhydroqualene;
- vegetable hydrocarbon oils such as liquid  
30 triglycerides of fatty acids of 4 to 24 carbon atoms, such as the triglycerides of heptanoic or octanoic acid or else sunflower oil, maize oil, soya oil, marrow oil, grapeseed oil, sesame oil, hazelnut oil, apricot oil, macadamia oil, castor oil or avocado oil,  
35 caprylic/capric acid triglycerides such as those sold by Stearineries Dubois or those sold under the names Miglyol 810, 812 and 818 by Dynamit Nobel, jojoba oil and shea butter;

- linear or branched hydrocarbons of mineral or synthetic origin, such as liquid paraffins and their derivatives, petroleum jelly, polydecenes, polybutenes and hydrogenated polyisobutene such as Parleam;
- 5 - synthetic esters and ethers, in particular those of fatty acids, such as the oils of formula  $R_1COOR_2$  in which  $R_1$  represents the residue of a higher fatty acid containing from 1 to 40 carbon atoms and  $R_2$  represents a hydrocarbon chain containing from 1 to 40 carbon atoms, 10 with  $R_1 + R_2 \geq 10$ , such as, for example, purcellin oil, isononyl isononanoate, isopropyl myristate, 2-ethylhexyl palmitate, 2-octyldedecyl stearate, 2-octyldodecyl erucate, isostearyl isostearate, tridecyl trimellitate; hydroxyl esters such as isostearyl 15 lactate, octyl hydroxystearate, octyldodecyl hydroxystearate, diisostearyl malate, triisocetyl citrate, and heptanoates, octoanates and decanoates of fatty alcohols; polyol esters such as propylene glycol dioctanoate, neopentyl glycol diheptanoate, diethylene 20 glycol diisononanoate; and pentaerythritol esters such as pentaerythrityl tetraisostearate;
  - fatty alcohols having from 12 to 26 carbon atoms, such as octyldodecanol, 2-butyloctanol, 2-hexyldecanol, 2-undecylpentadecanol and oleyl alcohol;
- 25 - fluoro oils which are optionally partially hydrocarbon-based and/or silicone-based;
  - silicone oils such as volatile or non-volatile linear or cyclic polydimethylsiloxanes (PDMS); polydimethylsiloxanes containing alkyl, alkoxy or 30 phenyl groups, which groups are pendant or at the end of the silicone chain and have from 2 to 24 carbon atoms; phenyl silicones such as phenyl trimethicones, phenyl dimethicones, phenyltrimethylsiloxydiphenylsiloxanes; diphenyl dimethicones, diphenylmethyl- 35 diphenyltrisiloxanes and 2-phenylethyl trimethylsiloxy silicates, and
    - mixtures thereof.

- 11 -

The oil preferably has a molecular mass of greater than or equal to 250 g/mol, in particular between 250 and 10 000 g/mol, preferably greater than or equal to 300 g/mol, in particular between 300 and 8000 g/mol, and better still greater than or equal to 400 g/mol, in particular between 400 and 5000 g/mol. This oil may be selected from:

- polybutylenes such as Indopol H-100 (of molar mass or MM = 965 g/mol), Indopol H-300 (MM = 1340 g/mol) and Indopol H-1500 (MM = 2160 g/mol), which are sold or manufactured by Amoco;
- hydrogenated polyisobutylenes such as Panalane H-300 E, sold or manufactured by Amoco (M = 1340 g/mol), Viseal 20000, sold or manufactured by Syntel (MM = 6000 g/mol) and Rewopal PIB 1000, sold or manufactured by Witco (MM = 1000 g/mol);
- polydecenes and hydrogenated polydecenes such as Puresyn 10 (MM = 723 g/mol) and Puresyn 150 (MM = 9200 g/mol), sold or manufactured by Mobil Chemicals,
- esters such as
- esters of linear fatty acids having a total carbon number ranging from 30 to 70, such as pentaerythrityl tetrapelargonate (MM = 697.05 g/mol),
- hydroxyl esters such as diisostearyl malate (MM = 639 g/mol),
- aromatic esters such as tridecyl trimellitate (MM = 757.19 g/mol),
- esters of C24-C28 branched fatty acids or fatty alcohols, such as those described in application EP-A-0 955 039, and especially triisocetyl citrate (MM = 865 g/mol), pentaerythrityl tetraisnonanoate (MM = 697.05 g/mol), glyceryl triisostearate (MM = 891.51 g/mol), glyceryl 2-tridecyltetradecanoate (MM = 1143.98 g/mol), pentaerythrityl tetraisostearate (MM = 1202.02 g/mol), poly-2-glyceryl tetraisostearate (MM = 1232.04 g/mol) or else pentaerythrityl 2-tetradecyltetradecanoate (MM = 1538.66 g/mol),

- oils of plant origin such as sesame oil (820.6 g/mol), and
- mixtures thereof.

- 5 In accordance with the invention, in the case of the abovementioned combinations, the term "semi-crystalline polymer" refers to polymers containing a crystallizable portion, a crystallizable pendant chain or a crystallizable block in the skeleton, and an amorphous
- 10 portion in the skeleton, and having a first-order reversible phase-change temperature, in particular of fusion (solid-liquid transition). When the crystallizable portion is in the form of a crystallizable block of the polymeric skeleton, the
- 15 amorphous portion of the polymer is in the form of an amorphous block; in this case the semi-crystalline polymer is a block copolymer of, for example, diblock, triblock or multiblock type comprising at least one crystallizable block and at least one amorphous block.
- 20 A block generally comprises at least 5 identical repeating units. The crystallizable block or blocks are then different in chemical nature from the amorphous block or blocks.
- 25 The semi-crystalline polymer according to the invention has a melting point of greater than or equal to 30°C (in particular ranging from 30°C to 80°C), preferably ranging from 30°C to 60°C. This melting point is a first-order change-of-state temperature.
- 30 This melting point can be measured by any known method and in particular by means of a differential scanning calorimeter (DSC).
- 35 Advantageously the semi-crystalline polymer or polymers to which the invention applies exhibit a number-average molecular mass of greater than or equal to 1000.

Advantageously, the semi-crystalline polymer or polymers of the composition of the invention have a number-average molecular mass  $\bar{M}_n$  ranging from 2000 to 800 000, preferably from 3000 to 500 000, better still from 4000 to 150 000, and in particular less than 100 000, and better still from 4000 to 99 000. Preferably they have a number-average molecular mass of more than 5600, ranging for example from 5700 to 99 000.

10

A "crystallizable chain or block" in the sense of the invention is a chain or block which if it were alone would pass reversibly from the amorphous state to the crystalline state depending on whether the temperature was above or below the melting point. A chain in the sense of the invention is a group of atoms which is pendant or lateral relative to the skeleton of the polymer. A block is a group of atoms belonging to the skeleton, the group constituting one of the repeating units of the polymer. Advantageously the "crystallizable pendant chain" may be a chain containing at least 6 carbon atoms.

The crystallizable block(s) or chain(s) of the semi-crystalline polymers preferably represent at least 30% of the total weight of each polymer and better still at least 40%. The semi-crystalline polymers of the invention containing crystallizable blocks are block or multiblock polymers. They can be obtained by polymerizing monomers containing reactive double bonds (or ethylenic bonds) or by polycondensation. When the polymers of the invention are polymers containing crystallizable side chains they are advantageously in random or statistical form.

35

The semi-crystalline polymers of the invention are preferably synthetic in origin. Moreover, they do not include a polysaccharide skeleton. Generally speaking,



the crystallizable units (chains or blocks) of the semi-crystalline polymers according to the invention originate from one or more monomers containing crystallizable block(s) or chain(s) used for the  
5 preparation of the semi-crystalline polymers.

In accordance with the invention the low-melting-point semi-crystalline polymer and the high-melting-point semi-crystalline polymer are selected from block  
10 copolymers containing at least one crystallizable block and at least one amorphous block, homopolymers and copolymers carrying at least one crystallizable side chain per repeating unit, and mixtures thereof.

15 The semi-crystalline polymers which can be used in the invention are in particular:

- block polyolefin copolymers of controlled crystallization, particularly those whose monomers are described in EP-A-0 951 897,
- 20 - polycondensates, particularly those of aliphatic or aromatic polyester type or aliphatic/aromatic copolyester type,
- homopolymers or copolymers carrying at least one crystallizable side chain and homopolymers or  
25 copolymers carrying in the skeleton at least one crystallizable block, such as those described in US-A-5 156 911,
- homopolymers or copolymers carrying at least one crystallizable side chain, in particular containing one  
30 or more fluorine-containing groups, such as those described in WO-A-01/19333,
- and mixtures thereof.

In these two latter cases the crystallizable side  
35 chain(s) or block(s) are hydrophobic.

A) Semi-crystalline polymers having crystallizable side chains

Mention may be made in particular of those defined in US-A-5,156,911 and WO-A-01/19333. These are homopolymers or copolymers containing from 50 to 100%  
5 by weight of units resulting from the polymerization of one or more monomers which carry a crystallizable hydrophobic side chain.

- These homopolymers or copolymers are of any kind,  
10 provided that they meet the conditions indicated above.

They may result:

- from the polymerization, in particular the free-radical polymerization, of one or more monomers  
15 containing reactive or ethylenic double bond(s) in respect of a polymerization, namely containing a vinylic, (meth)acrylic or allylic group;
- from the polycondensation of one or more monomers which carry co-reactive groups (carboxylic or sulphonic  
20 acid, alcohol, amine or isocyanate), such as, for example, polyesters, polyurethanes, polyethers, polyureas and polyamides.

Generally speaking these polymers are selected in  
25 particular from homopolymers and copolymers resulting from the polymerization of at least one crystallizable-chain monomer which can be represented by formula X:



35 with M representing an atom of the polymeric skeleton, S representing a spacer and C representing a crystallizable group.

The crystallizable chains "-S-C" may be aliphatic or aromatic, optionally fluorinated or perfluorinated. "S" represents in particular a  $(CH_2)_n$  or  $(CH_2CH_2O)_n$  or  $(CH_2O)$  group which is linear or branched or cyclic, with n being an integer ranging from 0 to 22. "S" is preferably a linear group. Preferably "S" and "C" are different.

When the crystallizable chains "-S-C" are aliphatic hydrocarbon chains they contain alkyl hydrocarbon chains containing at least 11 carbon atoms and not more than 40 carbon atoms, and better still not more than 24 carbon atoms. They are in particular aliphatic chains or alkyl chains possessing at least 12 carbon atoms and preferably the chains in question are  $C_{14}$ - $C_{24}$  alkyl chains. When the chains in question are fluorinated or perfluorinated alkyl chains they contain at least 6 fluorinated carbon atoms and in particular at least 11 carbon atoms of which at least 6 carbon atoms are fluorinated.

Examples of semi-crystalline polymers or copolymers containing one or more crystallizable chains include those resulting from the polymerization of one or more monomers as follows: saturated alkyl (meth)acrylates with the  $C_{14}$ - $C_{24}$  alkyl group, perfluoroalkyl (meth)acrylates with a  $C_{11}$ - $C_{15}$  perfluoroalkyl group, N-alkyl(meth)acrylamides with the  $C_{14}$  to  $C_{24}$  alkyl group with or without a fluorine atom, vinyl esters containing alkyl or perfluoro(alkyl) chains with the  $C_{14}$  to  $C_{24}$  alkyl group (with at least 6 fluorine atoms for a perfluoroalkyl chain), vinyl ethers containing alkyl or perfluoro(alkyl) chains with the  $C_{14}$ - $C_{24}$  alkyl group and at least 6 fluorine atoms for a perfluoroalkyl chain,  $C_{14}$  to  $C_{24}$  alpha-olefins such as, for example, octadecene, para-alkylstyrenes with an alkyl group containing 12 to 24 carbon atoms, and mixtures thereof.

When the polymers result from a polycondensation the hydrocarbon and/or fluorinated crystallizable chains as defined above are carried by a monomer which may be a diacid, a diol, a diamine or a diisocyanate.

5

When the polymers of the invention are copolymers they also include from 0 to 50% of groups Y or Z resulting from the copolymerization:

10    α) of Y, which is a polar or non-polar monomer or a mixture of the two:

• when Y is a polar monomer it is either a monomer which carries polyoxyalkylenated groups (especially oxyethylenated and/or oxypropylenated), a hydroxyalkyl  
15    (meth)acrylate such as hydroxyethyl acrylate, (meth)acrylamide, an N-alkyl(meth)acrylamide, an N,N-dialkyl(meth)acrylamide such as, for example, N,N-diisopropylacrylamide or N-vinylpyrrolidone (NVP), N-vinylcaprolactam, a monomer which carries at least  
20    one carboxylic acid group such as (meth)acrylic, crotonic, itaconic, maleic or fumaric acid or which carries a carboxylic anhydride group such as maleic anhydride, and mixtures thereof.

• When Y is a non-polar monomer it may be an ester  
25    of the linear, branched or cyclic alkyl (meth)acrylate type, a vinyl ester, an alkyl vinyl ether, an alpha-olefin, styrene or styrene substituted by a C<sub>1</sub> to C<sub>10</sub> alkyl group, such as α-methylstyrene or a polyorganosiloxane-type macromonomer containing vinylic  
30    unsaturation.

"Alkyl" for the purposes of the invention is a saturated group, in particular a C<sub>8</sub> to C<sub>24</sub> group, unless  
35    specifically mentioned, and better still a C<sub>14</sub> to C<sub>24</sub> group.

$\beta$ ) of Z, which is a polar monomer or a mixture of polar monomers. In this case Z has the same definition as "polar Y" defined above.

- 5 Semi-crystalline polymers containing a crystallizable side chain are preferably alkyl (meth)acrylate or alkyl(meth)acrylamide homopolymers with an alkyl group as defined above, and in particular C<sub>14</sub>-C<sub>24</sub> group, copolymers of these monomers with a hydrophilic  
10 monomer, preferably of a different kind from (meth)acrylic acid, such as N-vinylpyrrolidone, or hydroxyethyl (meth)acrylate, and mixtures thereof.

- B) Polymers carrying in the skeleton at least one  
15 crystallizable block

These polymers are, in particular, block copolymers consisting of at least 2 chemically different blocks of which one is crystallizable.

- 20 - It is possible to use the block polymers defined in patent US-A-5,156,911;  
- block copolymers of olefin or of cycloolefin containing a crystallizable chain, such as those obtained from the block polymerization of:  
25 • cyclobutene, cyclohexene, cyclooctene, norbornene (i.e. bicyclo[2.2.1]hept-2-ene), 5-methylnorbornene, 5-ethylnorbornene, 5,6-dimethylnorbornene, 5,5,6-trimethylnorbornene, 5-ethylidenenorbornene, 5-phenylnorbornene, 5-benzylnorbornene, 5-vinyl-  
30 norbornene, 1,4,5,8-dimethano-1,2,3,4,4a,5,8a-octahydronaphthalene, dicyclopentadiene or mixtures thereof,  
• with ethylene, propylene, 1-butene, 3-methyl-1-butene, 1-hexene, 4-methyl-1-pentene, 1-octene, 1-decene, 1-eicosene or mixtures thereof,  
35 • and in particular block copoly(ethylene/norbornene) and block (ethylene/propylene/ethylidenenorbornene) terpolymers. It is also possible to use those resulting from the block copolymerization

of at least two C<sub>2</sub>-C<sub>16</sub> and better still C<sub>2</sub>-C<sub>12</sub> and even better still C<sub>4</sub>-C<sub>12</sub>  $\alpha$ -olefins, such as those mentioned above, and in particular the block bipolymers of ethylene and of 1-octene.

5

- The copolymers may be copolymers having at least one crystallizable block, the remainder of the copolymer being amorphous (at ambient temperature). These copolymers may further comprise two chemically  
10 different crystallizable blocks. Preferred copolymers are those which possess at ambient temperature both a crystallizable block and an amorphous block which is both hydrophobic and lipophilic, the blocks being distributed sequentially; mention may be made, for  
15 example, of polymers possessing one of the following crystallizable blocks and one of the following amorphous blocks:

• Naturally crystallizable blocks: a) polyester such as poly(alkylene terephthalate), b) polyolefin such as  
20 polyethylenes or polypropylenes.

• Amorphous and lipophilic block, such as amorphous polyolefins or copoly(olefin)s such as  
poly(isobutylene), hydrogenated polybutadiene and  
hydrogenated poly(isoprene).

25

Possible examples of such copolymers containing a crystallizable block and an amorphous block, the blocks being distinct, include:

30  $\alpha$ ) block poly( $\epsilon$ -caprolactone)-b-poly(butadiene) copolymers, used preferably in hydrogenated form, such as those described in the article "Melting behavior of poly( $\epsilon$ -caprolactone)-block-polybutadiene copolymers" by S. Nojima, *Macromolécules*, 32, 3727-3734 (1999).

35

$\beta$ ) hydrogenated poly(butylene terephthalate)-b-poly(isoprene) block or multiblock copolymers, cited in the article "Study of morphological and mechanical

properties of PP/PBT" by B. Boutevin et al., Polymer Bulletin, 34, 117-123 (1995).

γ) the poly(ethylene)-b-copoly(ethylene/propylene)  
5 block copolymers cited in the articles "Morphology of semi-crystalline block copolymers of ethylene-(ethylene-alt-propylene)" by P. Rangarajan et al., Macromolecules, 26, 4640-4645 (1993) and "Polymer aggregates with crystalline cores: the system poly(ethylene)-  
10 poly(ethylene-propylene)" by P. Richter et al., Macromolécules, 30, 1053-1068 (1997).

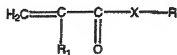
δ) the poly(ethylene)-b-poly(ethylethylene) block copolymers cited in the general article  
15 "Crystallization in block copolymers" by I.W. Hamley, Advances in Polymer Science, Vol. 148, 113-137 (1999).

The semi-crystalline polymers of the composition of the invention may be non-crosslinked or partially  
20 crosslinked, since the degree of crosslinking is not detrimental to their dissolution or dispersion in the liquid fatty phase by heating above their melting point. This may then be a chemical crosslinking, by reaction with a polyfunctional monomer during the  
25 polymerization. It may also be a physical crosslinking, which may then be due either to the establishment of bonds of hydrogen type or dipolar type between groups carried by the polymer, such as, for example, the dipolar interactions between carboxylate ionomers,  
30 these interactions being low in quantity and borne by the polymer skeleton; or due to phase separation between the crystallizable blocks and the amorphous blocks carried by the polymer.

35 The semi-crystalline polymers of the composition according to the invention are preferably non-crosslinked.

According to one particular embodiment of the invention the polymer is selected from copolymers resulting from the polymerization of at least one monomer containing a crystallizable chain, selected from saturated C<sub>14</sub> to C<sub>24</sub> alkyl (meth)acrylates, C<sub>11</sub> to C<sub>15</sub> perfluoroalkyl (meth)acrylates, C<sub>14</sub> to C<sub>24</sub> N-alkyl(meth)acrylamides with or without a fluorine atom, vinyl esters containing C<sub>14</sub> to C<sub>24</sub> alkyl or perfluoroalkyl chains, vinyl ethers containing C<sub>14</sub> to C<sub>24</sub> alkyl or perfluoroalkyl chains, C<sub>14</sub> to C<sub>24</sub> α-olefins, para-alkylstyrenes with an alkyl group containing 12 to 24 carbon atoms, with at least one optionally fluorinated C<sub>1</sub> to C<sub>10</sub> monocarboxylic ester or amide, which can be represented by the following formula:

15



in which R<sub>1</sub> is H or CH<sub>3</sub>, R represents an optionally fluorinated C<sub>1</sub>-C<sub>10</sub> alkyl group and X represents O, NH or NR<sub>2</sub>, where R<sub>2</sub> represents an optionally fluorinated C<sub>1</sub>-C<sub>10</sub> alkyl group.

20

According to one more particular embodiment of the invention the polymer is derived from a monomer containing a crystallizable chain, selected from saturated C<sub>14</sub> to C<sub>22</sub> alkyl (meth)acrylates.

25

As a specific example of a structuring semi-crystalline polymer that can be used in the composition according to the invention, mention may be made of the Interlimer® products from Landec which are described in the brochure "Interlimer® polymers", Landec IP22 (Rev. 4-97). These polymers are in solid form at ambient temperature (25°C). They carry crystallizable side chains and have the above formula X.

30

35

The semi-crystalline polymers may in particular be:



- those described in Examples 3, 4, 5, 7, 9 and 13 of patent US-A-5,156,911 containing a -COOH group, resulting from the copolymerization of acrylic acid and C<sub>5</sub> to C<sub>16</sub> alkyl (meth)acrylate, and more particularly
- 5 from the copolymerization:
- of acrylic acid, hexadecyl acrylate and isodecyl acrylate in a 1/16/3 weight ratio,
  - of acrylic acid and pentadecyl acrylate in a 1/19 weight ratio,
  - 10 • of acrylic acid, hexadecyl acrylate and ethyl acrylate in a 2.5/76.5/20 weight ratio,
  - of acrylic acid, hexadecyl acrylate and methyl acrylate in a 5/85/10 weight ratio,
  - of acrylic acid and octadecyl methacrylate in a
  - 15 2.5/97.5 weight ratio,
  - of hexadecyl acrylate, polyethylene glycol methacrylate monomethyl ether, containing 8 ethylene glycol units, and acrylic acid in an 8.5/1/0.5 weight ratio.

- 20 It is also possible to use the structure "O" from National Starch, as described in US-A-5,736,125, with a melting point of 44°C, and also semi-crystalline polymers containing crystallizable pendant chains
- 25 containing fluorinated groups, as described in Examples 1, 4, 6, 7 and 8 of WO-A-01/19333.

- It is additionally possible to use the low-melting-point semi-crystalline polymers obtained by
- 30 copolymerizing stearyl acrylate and acrylic acid or NVP, as described in US-A-5,519,063 or EP-A-550745, and more especially those described in polymer preparation Examples 1 and 2 below, with melting points of 40°C and 38°C respectively.

- 35 It is also possible to use semi-crystalline polymers obtained by copolymerizing behenyl acrylate and acrylic acid or NVP, as described in US-A-5,519,063 and

EP-A-550745, and more especially those described in polymer preparation Examples 3 and 4 below, with melting points of 60°C and 58°C respectively.

- 5 The low- and/or high-melting-point semi-crystalline polymers preferably do not contain a carboxyl group.

The other abovementioned combinations may comprise the combination of a rheological agent with an oil.

10

This rheological agent is capable of thickening and/or gelling the oil phase. It may be present in an amount which is effective for increasing the viscosity of this phase, particularly until a solid gel is obtained,  
15 namely a product which does not flow under its own weight.

- This rheological agent is advantageously selected from lipophilic gelling agents, organic gellers and mixtures thereof.  
20

The lipophilic gelling agent may be organic or mineral, polymeric or molecular.

- 25 As inorganic lipophilic gelling agent mention may be made of optionally modified clays, such as hectorites modified with a C<sub>10</sub> to C<sub>22</sub> fatty acid ammonium chloride, such as hectorite modified with distearyl-dimethylammonium chloride.

30

Mention may also be made of optionally surface-hydrophobicized pyrogenic silica whose particle size is less than 1 µm. It is possible in effect to modify chemically the surface of the silica, by a chemical  
35 reaction which brings about a decrease in the number of silanol groups present on the surface of the silica. In particular it is possible to substitute the silanol groups by hydrophobic groups: in that case a

hydrophobic silica is obtained. The hydrophobic groups may be:

- trimethylsiloxy groups, obtained in particular by treating pyrogenic silica in the presence of hexamethyldisilazane. Silicas treated in this way are named "silica silylate" according to the CTFA (6th edition, 1995). They are sold, for example, under the names Aerosil R812® by Degussa and CAB-O-SIL TS-530® by Cabot.
- 10 - dimethylsilyloxy or polydimethylsiloxane groups, obtained in particular by treating pyrogenic silica in the presence of polydimethylsiloxane or dimethyldichlorosilane. Silicas treated in this way are named "silica dimethyl silylate" according to the CTFA
- 15 (6th edition, 1995). They are sold for example under the names Aerosil R972® and Aerosil R974® by Degussa and CAB-O-SIL TS-610® and CAB-O-SIL TS-720® by Cabot.

20 The hydrophobic pyrogenic silica preferably has a particle size which can be nanometric to micrometric, ranging for example from 5 to 200 nm approximately.

The polymeric organic lipophilic gelling agents are, for example, partly or completely crosslinked

25 elastomeric organopolysiloxanes of three-dimensional structure, such as those sold under the names KSG6, KSG16 and KSG18 by Shin-Etsu, Trefil E-505C or Trefil E-506C by Dow-Corning, Gransil SR-CYC, SR DMF10, SR-DC556, SR 5CYC gel, SR DMF 10 gel, SR DC 556 gel

30 from Grant Industries, SF 1204 and JK 113 by General Electric; ethylcellulose such as those sold under the name Ethocel by Dow Chemical; polyamides such as copolymers of a C<sub>36</sub> diacid condensed with ethylenediamine, with a weight-average molecular mass of

35 approximately 6000, such as the compounds sold by Arizona Chemical under the names Uniclear 80 and Uniclear 100, gums, especially silicone gums, such as PDMS having a viscosity > 100 000 centistokes, galacto-

mannans containing from one to six and better still from two to four hydroxyl groups per saccharide unit, substituted by a saturated or unsaturated alkyl chain, such as guar gum alkylated with C<sub>1</sub> to C<sub>6</sub> alkyl chains, and better still C<sub>1</sub> to C<sub>3</sub> alkyl chains, and mixtures thereof.

As preferred lipophilic gelling agent use is made of non-polymeric molecular organic gelling agents, also dubbed organic gellers, which are compounds whose molecules are capable of establishing, between themselves, physical interactions leading to self-aggregation of the molecules with formation of a 3D macromolecular network which is responsible for the gelation of the liquid fatty phase.

A "liquid fatty phase" in the sense of the invention is a fatty phase which is liquid at ambient temperature (25°C) and atmospheric pressure (760 mmHg or 105 Pa) and is composed of one or more fatty substances which are liquid at ambient temperature, also called oils, which are generally mutually compatible.

The macromolecular network may result from the formation of a network of fibrils (owing to stacking or aggregation of organic geller molecules), which immobilizes the molecules of the liquid fatty phase.

The ability to form this network of fibrils, and hence to gel, depends on the nature (or chemical class) of the organic geller, on the nature of the substituents carried by its molecules for a given chemical class, and on the nature of the liquid fatty phase.

The physical interactions are diverse but exclude co-crystallization. These physical interactions are, in particular, interactions such as self-complementary hydrogen interactions,  $\pi$  interactions between

unsaturated rings, dipolar interactions, coordination bonds with organometallic derivatives, and combinations thereof. In general, each molecule of an organic geller can establish a number of types of physical interaction  
5 with a neighbouring molecule. Thus, advantageously, the molecules of the organic gellers according to the invention include at least one group capable of establishing hydrogen bonds and, better still, at least two groups capable of establishing hydrogen bonds, at  
10 least one aromatic ring, and better still at least two aromatic rings, at least one or more bonds with ethylenic unsaturation and/or at least one or more asymmetric carbons. The groups capable of forming hydrogen bonds are preferably selected from hydroxyl,  
15 carbonyl, amine, carboxylic acid, amide, urea and benzyl groups and combinations thereof.

The organic geller or gellers according to the invention are soluble in the liquid fatty phase after  
20 heating to give a transparent homogeneous liquid phase. They may be solid or liquid at ambient temperature and atmospheric pressure.

The molecular organic geller or gellers which can be  
25 used in the composition according to the invention are, in particular, those described in the document "Specialist Surfactants", edited by D. Robb, 1997, p. 209-263, Chapter 8 by P. Terech, European applications EP-A-1068854 and EP-A-1086945 or else  
30 application WO-A-02/47031.

Among these organic gellers mention may be made in particular of the amides of carboxylic acids, especially tricarboxylic acids, such as cyclohexane-  
35 tricarboxamides (see European patent application EP-A-1068854), diamides having hydrocarbon chains each containing 1 to 22 carbon atoms, for example 6 to 18 carbon atoms, said chains being unsubstituted or

substituted by at least one substituent selected from ester, urea and fluoro groups (see application EP-A-1086945), and in particular the diamides resulting from the reaction of diaminocyclohexane, in particular  
5 diaminocyclohexane in trans form, and an acid chloride such as, for example, N,N'-bis(dodecanoyl)-1,2-diaminocyclohexane, the amides of N-acylamino acids such as the diamides resulting from the action of an N-acylamino acid with amines containing 1 to 22 carbon  
10 atoms, such as, for example, those described in WO-93/23008, and especially the amides of N-acylglutamic acid in which the acyl group represents a C<sub>8</sub> to C<sub>22</sub> alkyl chain, such as N-lauroyl-L-glutamic acid dibutyl amide, manufactured or sold by Ajinomoto under  
15 the name GP-1, and mixtures thereof.

The compositions may contain from 10 to 60% of structuring agent. Preferably the composition contains from 15 to 50% by weight, better still from 20 to 40%,  
20 of structuring agent, which allows overall solids contents to be attained in the composition of > 45%, preferably > 46%, better still > 47%, even better > 48%, and even > 50% while maintaining a satisfactory consistency index < 1000 Pa, preferably between 1 and  
25 900 Pa and better still between 10 and 800 Pa.

Conventional eye makeup compositions, such as mascaras, generally have a consistency index of this order of magnitude but for dry extracts which are less than 45%  
30 and often less than 40%; for example, between 30% and 40%; this limits the volumizing effect.

One example (A) of a structuring agent according to the invention, consisting of a semi-crystalline polymer in  
35 combination with an oil, is the following:

Fatty phase = mixture of polybutene/copolymer of stearyl acrylate and N-vinylpyrrolidone (40/60) with a melting point of 56°C.

- 5 Fatty phase = polybutene(1)/stearyl acrylate-N-vinylpyrrolidone (40/60) copolymer (2) mixture with a melting point of 56°C.

(1): Indopol H 100 from AMOCO

- 10 (2): Basic polymer with a melting point of 56°C, prepared in accordance with the following procedure.

15 A 1 l reactor equipped with a central stirrer with anchor, a condenser and a thermometer is charged with 120 g of cyclohexane, which is heated from the ambient temperature to 80°C over 45 min. At 80°C, over the course of 2 h, the following mixture C<sub>1</sub> is introduced:

- 20 40 g of cyclohexane + 4 g of Triganox 141 [2,5-bis(2-ethylhexanoylperoxy)-2,5-dimethylhexane].

30 min after the beginning of the introduction of the mixture C<sub>1</sub>, the mixture C<sub>2</sub> is introduced, over 1 h 30 min, this mixture C<sub>2</sub> consisting of:

190 g of stearyl acrylate + 10 g of N-vinylpyrrolidone + 400 g of cyclohexane.

- 30 After the two feeds the mixture is left to act for 3 h more at 80°C and then all of the cyclohexane present in the reaction mixture is distilled off under atmospheric pressure.

- 35 This gives the polymer with an active substance content of 100% by weight.

Its weight-average molecular mass  $M_w$  is 38 000, expressed in polystyrene equivalents, and its melting point  $T_f$  is 56°C as measured by DSC.

5 Tack = 2.63 N.s

Hardness = 5.84 MPa

Tack measurement protocol

- 10 The tack of the wax is measured at 20°C using the texturometre sold under the name TA-TX2i by Rheo, equipped with an acrylic polymer spindle in the shape of a cone forming an angle of 45°, by measuring the change in the force (compressive force or stretching force) (F) as a function of the time during the following operation:

The spindle is moved at a speed of 0.5 mm/s and then penetrates the wax to a depth of 2 mm. When the spindle has penetrated the wax to the depth of 2 mm, the spindle is held fixed for 1 second (corresponding to the relaxation time) and then withdrawn at a speed of 0.5 mm/s. During the relaxation time, the force (compressive force) decreases sharply to reach zero and then, during the withdrawal of the spindle, the force (stretching force) becomes negative before again increasing towards the value 0. The tack corresponds to the integral of the curve of force as a function of time for the portion of the curve corresponding to negative values of the force (stretching force). The value of the tack is expressed in N.s.

To carry out the measurement of the tack of the wax, the wax is melted at a temperature equal to the melting point of the wax + 10°C. The melted wax is poured into a container 25 mm in diameter and 20 mm in depth. The wax is recrystallized at ambient temperature (25°C) for 24 hours such that the surface of the wax is flat and



smooth, and then the wax is stored for at least 1 hour at 20°C before the tack measurement is carried out.

Hardness measurement protocol

5

The hardness of the wax is measured at 20°C using the texturometre sold under the name TA-TX2i by Rheo, equipped with a stainless steel spindle in the shape of a cylinder with a diameter of 2 mm, by measuring the  
10 change in the force (compressive force or stretching force) (F) as a function of the time during the following operation:

The spindle is moved at a speed of 0.1 mm/s and then  
15 penetrates the wax to a depth of 0.3 mm. When the spindle has penetrated the wax to the depth of 0.3 mm, the spindle is held fixed for 1 second (corresponding to the relaxation time) and then withdrawn at a speed of 0.1 mm/s. During the relaxation time, the force  
20 (compressive force) decreases sharply to reach zero and then, during the withdrawal of the spindle, the force (stretching force) becomes negative before again increasing towards the value 0. The hardness corresponds to the maximum compressive force measured  
25 between the surface of the spindle and the wax at the moment they are brought into contact. The value of this force is expressed in MPa.

To carry out the measurement of the hardness of the  
30 wax, the wax is melted at a temperature equal to the melting point of the wax + 20°C. The melted wax is poured into a container 30 mm in diameter and 20 mm in depth. The wax is recrystallized at ambient temperature (25°C) for 24 hours such that the surface of the wax is  
35 flat and smooth, and then the wax is stored for at least 1 hour at 20°C before the hardness measurement is carried out.

Consistency index measurement protocol

The compositions according to the invention are characterized with the aid of the texture analyzer  
5 offered under the name TA-TX2i by Rheo.

The test consists in contacting a stainless steel cylindrical probe 12 mm in diameter with the product (a cylindrical container of diameter = 35 mm and depth =  
10 15 mm filled with product, whose surface is levelled so as to obtain a thoroughly planar surface).

Measurement is repeated three times per product.

15 The consistency index is measured during the contact phase of the probe with the product. This phase takes place with a constant displacement of 0.2 mm. The probe therefore sinks down into the product down to this depth of 0.2 mm at a rate of 10 mm/s. The force (or  
20 stress) measured at this point in time gives the consistency index (in Pa) of the product. The probe is then held in this position for one second.

Solids content measurement protocol

25 This consists of a measurement of the dry extract of the mascara liquor, which is carried out on a Mettler Toledo HG 53 balance (halogen moisture analyzer).

30 A sample of mascara (2-3 g) is deposited on an aluminium dish and subjected to a temperature of 120°C for 60 minutes. The measurement of the dry extract corresponds to the monitoring of the mass of the sample over time. The final solids content is therefore the  
35 percentage of the final mass (after 60 min) in relation to the initial mass:  $DE = (\text{final mass}/\text{initial mass}) \times 100$ .

The composition according to the invention is a makeup composition, a makeup base, a "topcoat" composition to be applied over makeup, or a composition for the cosmetic treatment or care of keratin fibres.

5

The composition according to the invention is applied more particularly to the eyelashes. Consequently, the composition of the invention may be a composition for coating the eyelashes, in particular a composition for making up the eyelashes, also called mascara, a composition to be applied over eyelash makeup, also called topcoat, or else a composition for treating the eyelashes, in particular the eyelashes of human beings or false eyelashes. More especially, the composition is a mascara.

15

The composition according to the invention forms a physiologically acceptable medium.

20 In the present application, a "physiologically acceptable medium" is a non-toxic medium which is compatible with the keratin fibres of human beings, in particular the eyelashes or the eyebrows, such as a cosmetic medium, it being possible for the cosmetic medium to be a hydrophilic or lipophilic cosmetic medium.

25

The composition may comprise water and optionally one or more hydrophilic organic solvents, i.e. one or more water-miscible organic solvents, such as alcohols and especially monoalcohols having 2 to 5 carbon atoms, such as ethanol, isopropanol or n-propanol, polyols having 2 to 8 carbon atoms, such as glycerol, diglycerol, propylene glycol, ethylene glycol, 1,3-butylene glycol, sorbitol, pentylene glycol, C<sub>3</sub>-C<sub>4</sub> ketones and C<sub>2</sub>-C<sub>4</sub> aldehydes.

30

35

The water or the mixture of water and hydrophilic organic solvent(s) may be present in the composition according to the invention in an amount ranging from 0.1% to 90% by weight, relative to the total weight of the composition, and preferably from 0.1% to 60% by weight.

The composition according to the invention may comprise at least one fatty compound which is paste-like at ambient temperature. A paste-like fatty substance in the sense of the invention is a fatty substance having a melting point ranging from 20 to 55°C, preferably from 25 to 45°C, and/or a viscosity at 40°C ranging from 0.1 to 40 Pa.s (1 to 400 poises), preferably 0.5 to 25 Pa.s, measured on the Contraves TV or Rhéomat 80, equipped with a rotor rotating at 60 Hz. The skilled worker is able to select the rotor which allows the viscosity to be measured, from the rotors MS-r3 and MS-r4, on the basis of his or her general knowledge, so as to be able to carry out measurement of the paste-like test compound.

These fatty substances are preferably hydrocarbon compounds, optionally of polymeric type; they may also be selected from silicone compounds; they may also be in the form of a mixture of hydrocarbon compounds and/or silicone compounds. In the case of a mixture of different paste-like fatty substances it is preferred to use paste-like hydrocarbon compounds (containing primarily carbon atoms and hydrogen atoms and optionally ester groups) in majority proportion.

Among the paste-like compounds which can be used in the composition according to the invention, mention may be made of lanolins and lanolin derivatives such as acetylated lanolins or oxypropylenated lanolins or isopropyl lanolate having a viscosity of 18 to 21 Pa.s, preferably 19 to 20.5 Pa.s, and/or a melting point of

30 to 55°C, and mixtures thereof. It is also possible to use esters of fatty alcohols or acids, particularly those having 20 to 65 carbon atoms (melting point of the order of 20 to 35°C and/or viscosity at 40°C ranging from 0.1 to 40 Pa.s) such as triisostearyl or cetyl citrate; arachidyl propionate; polyvinyl laurate; cholesterol esters such as triglycerides of plant origin, such as hydrogenated vegetable oils, viscous polyesters such as poly(12-hydroxystearic) acid, and mixtures thereof.

Mention may also be made of silicone paste-like fatty substances such as polydimethylsiloxanes (PDMS) having pendant chains of the alkyl or alkoxy type having 8 to 24 carbon atoms, and a melting point of 20-55°C, such as stearyl dimethicones, especially those sold by Dow Corning under the trade names DC2503 and DC25514, and mixtures thereof.

The paste-like fatty substance may be present in the composition according to the invention in an amount ranging from 0.01 to 60% by weight relative to the total weight of the composition, preferably ranging from 0.5 to 45% by weight, and better still ranging from 2% to 30% by weight, in the composition.

The composition according to the invention may comprise emulsifying surfactants, present in particular in a proportion ranging from 2 to 30% by weight relative to the total weight of the composition, and better still from 5% to 15%. These surfactants may be selected from anionic surfactants or non-ionic surfactants. Reference may be made to Encyclopedia of Chemical Technology, Kirk-Othmer, Volume 22, pp. 333-432, 3rd edition, 1979, Wiley, for the definition of the properties and functions (emulsifier) of the surfactants, in particular to pp. 347-377 of this reference, for anionic and non-ionic surfactants.

The surfactants used preferentially in the composition according to the invention are selected:

- from non-ionic surfactants: fatty acids, fatty  
5 alcohols, polyethoxylated or polyglycerolated fatty  
alcohols such as polyethoxylated stearyl or  
cetylstearyl alcohols, esters of fatty acid and  
sucrose, esters of alkyl glucose, in particular  
polyoxyethylenated fatty C<sub>1</sub>-C<sub>6</sub> alkyl glucose esters, and  
10 mixtures thereof.

- from anionic surfactants: C<sub>16</sub>-C<sub>30</sub> fatty acids  
neutralized with amines, aqueous ammonia or alkali  
metal salts, and mixtures thereof.

15 Preference is given to using surfactants which allow an  
oil-in-water or wax-in-water emulsion to be obtained.

The composition according to the invention may comprise  
at least one film-forming polymer.

20

The film-forming polymer may be present in the  
composition according to the invention in an amount, in  
terms of dry material, ranging from 0.1% to 60% by  
weight relative to the total weight of the composition,  
25 preferably from 0.5% to 40% by weight, and better still  
from 1% to 30% by weight.

In the present application, the term "film-forming  
polymer" refers to a polymer which is capable, by  
30 itself or in the presence of an auxiliary film-forming  
agent, of forming a continuous and adherent film on a  
support, in particular on keratin materials such as the  
eyelashes.

35 Among the film-forming polymers which may be used in  
the composition of the present invention, mention may  
be made of synthetic polymers, of free-radical type or

of polycondensate type, and of polymers of natural origin, and mixtures thereof.

5 The term "free-radical film-forming polymer" refers to a polymer obtained by polymerizing monomers containing unsaturation, in particular ethylenic unsaturation, each monomer being capable of undergoing homopolymerization (unlike polycondensates).

10 The film-forming polymers of free-radical type may in particular be vinyl polymers or copolymers, especially acrylic polymers.

The vinyl film-forming polymers may result from the  
15 polymerization of monomers containing ethylenic unsaturation and having at least one acidic group and/or of esters of these acidic monomers and/or of amides of these acidic monomers.

20 As acid-group-bearing monomer it is possible to use  $\alpha,\beta$ -ethylenic unsaturated carboxylic acids such as acrylic acid, methacrylic acid, crotonic acid, maleic acid and itaconic acid. It is preferred to use (meth)-  
25 acrylic acid and crotonic acid, and more preferably (meth)acrylic acid.

The esters of acidic monomers are advantageously selected from esters of (meth)acrylic acid (also called (meth)acrylates), in particular alkyl (meth)acrylates,  
30 especially  $C_1$ - $C_{30}$ , preferably  $C_1$ - $C_{20}$ , alkyl (meth)acrylates, aryl (meth)acrylates, especially  $C_6$ - $C_{10}$  aryl (meth)acrylates, and hydroxyalkyl (meth)acrylates, in particular  $C_2$ - $C_6$  hydroxyalkyl (meth)acrylates.

35 Among alkyl (meth)acrylates mention may be made of methyl methacrylate, ethyl methacrylate, butyl methacrylate, isobutyl methacrylate, 2-ethylhexyl meth-

acrylate, lauryl methacrylate and cyclohexyl methacrylate.

- Among hydroxyalkyl (meth)acrylates mention may be made  
5 of hydroxyethyl acrylate, 2-hydroxypropyl acrylate, hydroxyethyl methacrylate, and 2-hydroxypropyl methacrylate.

- Among aryl (meth)acrylates mention may be made of  
10 benzyl acrylate and phenyl acrylate.

Particularly preferred esters of (meth)acrylic acid are alkyl (meth)acrylates.

- 15 According to the present invention the alkyl group of the esters can be either fluorinated or perfluorinated: in other words, some or all of the hydrogen atoms of the alkyl group are substituted by fluorine atoms.
- 20 Possible examples of amides of acidic monomers include (meth)acrylamides, and especially N-alkyl-(meth)acrylamides, particularly where the alkyl is C<sub>2</sub>-C<sub>12</sub>. Among N-alkyl(meth)acrylamides mention may be made of N-ethylacrylamide, N-t-butylacrylamide, N-t-octylacrylamide and N-undecylacrylamide.  
25

- The vinyl film-forming polymers may also result from the homopolymerization or copolymerization of monomers selected from vinyl esters and styrenic monomers. In  
30 particular these monomers can be polymerized with acidic monomers and/or their esters and/or their amides, such as those mentioned hitherto.

- Possible examples of vinyl esters include vinyl  
35 acetate, vinyl neodecanoate, vinyl pivalate, vinyl benzoate and vinyl t-butyl benzoate.



Styrenic monomers include styrene and alpha-methylstyrene.

- 5 Film-forming polycondensates include polyurethanes, polyesters, polyester amides, polyamides, epoxy ester resins and polyureas.

- 10 Polyurethanes may be selected from anionic, cationic, non-ionic or amphoteric polyurethanes, acrylic polyurethanes, polyurethane-polyvinylpyrrolidones, polyester-polyurethanes, polyether-polyurethanes, polyureas, polyurea-polyurethanes, and mixtures thereof.

- 15 Polyesters may be obtained conventionally by polycondensation of dicarboxylic acids with polyols, especially diols.

- 20 The dicarboxylic acid may be aliphatic, alicyclic or aromatic. Possible examples of such acids include oxalic acid, malonic acid, dimethylmalonic acid, succinic acid, glutaric acid, adipic acid, pimelic acid, 2,2-dimethylglutaric acid, azelaic acid, suberic acid, sebacic acid, fumaric acid, maleic acid, itaconic acid, phthalic acid, dodecanedioic acid, 1,3-cyclohexanedicarboxylic acid, 1,4-cyclohexanedicarboxylic acid, isophthalic acid, terephthalic acid, 2,5-norbornanedicarboxylic acid, diglycolic acid, thiodipropionic acid, 2,5-naphthalenedicarboxylic acid, 30 2,6-naphthalenedicarboxylic acid. These dicarboxylic acid monomers may be used alone or in a combination of at least two dicarboxylic acid monomers. Among these monomers it is preferred to select phthalic acid, isophthalic acid and/or terephthalic acid.

- 35 The diol may be selected from aliphatic, alicyclic and aromatic diols. It is preferred to use a diol selected from ethylene glycol, diethylene glycol, triethylene

glycol, 1,3-propanediol, cyclohexane dimethanol and 1,4-butanediol. As other polyols it is possible to use glycerol, pentaerythritol, sorbitol and trimethylolpropane.

5

The polyester amides may be obtained in a similar way to the polyesters, by polycondensation of diacids with diamines or amino alcohols. As a diamine it is possible to use ethylenediamine, hexamethylenediamine, meta- or para-phenylenediamine. As an amino alcohol it is possible to use monoethanolamine.

10

The polyester may further comprise at least one monomer which carries at least one group  $-SO_3M$ , with M representing a hydrogen atom, an ammonium ion  $NH_4^+$  or a metal ion, such as, for example, an  $Na^+$ ,  $Li^+$ ,  $K^+$ ,  $Mg^{2+}$ ,  $Ca^{2+}$ ,  $Cu^{2+}$ ,  $Fe^{2+}$  or  $Fe^{3+}$  ion. It is possible to use in particular a difunctional aromatic monomer containing such a group  $-SO_3M$ .

15

20

The aromatic nucleus of the difunctional aromatic monomer additionally carrying a group  $-SO_3M$  as described above may be selected, for example, from benzene, naphthalene, anthracene, biphenyl, oxybiphenyl, sulphonylbiphenyl and methylenebiphenyl nuclei. As examples of a difunctional aromatic monomer further carrying a group  $-SO_3M$ , mention may be made of the following: sulphoisophthalic acid, sulphoterephthalic acid, sulphophthalic acid and 4-sulphonaphthalene-2,7-dicarboxylic acid.

25

30

Preference is given to using copolymers based on isophthalate/sulphoisophthalate, and more particularly copolymers obtained by condensing diethylene glycol, cyclohexanedimethanol, isophthalic acid and/or sulphoisophthalic acid.

35

The optionally modified polymers of natural origin may be selected from shellac resin, gum sandarac, dammars, elemis, copals, cellulosic polymers, and mixtures thereof.

5

In accordance with a first embodiment of the composition according to the invention, the film-forming polymer may be a water-soluble polymer and may be present in an aqueous phase of the composition; the polymer is therefore solubilized in the aqueous phase of the composition. Possible examples of water-soluble film-forming polymers include:

10

- proteins such as proteins of plant origin, such as wheat proteins and soya proteins; proteins of animal origin such as keratins, for example keratin hydrolysates and sulphonic keratins;

15

- cellulose polymers such as hydroxyethylcellulose, hydroxypropylcellulose, methylcellulose, ethylhydroxyethylcellulose and carboxymethylcellulose, and quaternized cellulose derivatives;

20

- acrylic polymers or copolymers, such as polyacrylates or polymethacrylates;

- vinyl polymers, such as polyvinylpyrrolidones, copolymers of methyl vinyl ether and malic anhydride, the copolymer of vinyl acetate and crotonic acid, copolymers of vinylpyrrolidone and vinyl acetate; copolymers of vinylpyrrolidone and caprolactam; and polyvinyl alcohol;

25

- polymers of natural origin, optionally modified, such as:

30

- gums arabic, guar gum, xanthan derivatives and karaya gum;

- alginates and carrageenans;

- glycoaminoglycans and hyaluronic acid and its derivatives;

35

- shellac resin, gum sandarac, dammars, elemis and copals;

- deoxyribonucleic acid;

- mucopolysaccharides such as chondroitin sulphates, and mixtures thereof.

In accordance with another variant embodiment of the composition according to the invention, the film-forming polymer may be a polymer which is solubilized in a liquid fatty phase comprising oils or organic solvents such as those described hitherto (in which case the film-forming polymer is referred to as a fat-soluble polymer). A "liquid fatty phase" for the purposes of the invention is a fatty phase which is liquid at ambient temperature (25°C) and atmospheric pressure (760 mmHg or  $10^5$  Pa), which is composed of one or more fatty substances which are liquid at ambient temperature, also called oils, which are generally compatible with one another.

The liquid fatty phase preferably comprises a volatile oil, optionally in a mixture with a non-volatile oil, the oils being selectable from the abovementioned oils.

Possible examples of fat-soluble polymers include vinyl ester copolymers (the vinyl group being connected directly to the oxygen atom of the ester group and the vinyl ester having a saturated, linear or branched hydrocarbon radical of 1 to 19 carbon atoms which is linked to the carbonyl of the ester group) with at least one other monomer which may be a vinyl ester (other than the vinyl ester already present), an  $\alpha$ -olefin (having 8 to 28 carbon atoms), an alkyl vinyl ether (in which the alkyl group contains 2 to 18 carbon atoms) or an allyl or methallyl ester (having a saturated, linear or branched hydrocarbon radical of 1 to 19 carbon atoms which is linked to the carbonyl of the ester group).

These copolymers may be crosslinked by means of crosslinkers which can be either of vinyl type or of

allyl or methallyl type, such as tetraallyloxyethane, divinylbenzene, divinyl octanedioate, divinyl dodecanedioate and divinyl octadecanedioate.

- 5 As examples of these copolymers mention may be made of the following copolymers: vinyl acetate/allyl stearate, vinyl acetate/vinyl laurate, vinyl acetate/vinyl stearate, vinyl acetate/octadecene, vinyl acetate/octadecyl vinyl ether, vinyl propionate/allyl  
10 laurate, vinyl propionate/vinyl laurate, vinyl stearate/1-octadecene, vinyl acetate/1-dodecene, vinyl stearate/ethyl vinyl ether, vinyl propionate/cetyl vinyl ether, vinyl stearate/allyl acetate, vinyl  
2,2-dimethyloctanoate/vinyl laurate, allyl  
15 2,2-dimethylpentanoate/vinyl laurate, vinyl dimethylpropionate/vinyl stearate, allyl dimethylpropionate/vinyl stearate, vinyl propionate/vinyl stearate, crosslinked with 0.2% of divinylbenzene, vinyl dimethylpropionate/vinyl laurate, crosslinked with 0.2%  
20 of divinylbenzene, vinyl acetate/octadecyl vinyl ether, crosslinked with 0.2% of tetraallyloxyethane, vinyl acetate/allyl stearate, crosslinked with 0.2% of divinylbenzene, vinyl acetate/1-octadecene crosslinked with 0.2% of divinylbenzene, and allyl propionate/allyl  
25 stearate crosslinked with 0.2% of divinylbenzene.

- Fat-soluble film-forming polymers also include fat-soluble homopolymers, and in particular those resulting from the homopolymerization of vinyl esters having 9 to  
30 22 carbon atoms or alkyl acrylates or methacrylates, the alkyl radicals having 10 to 20 carbon atoms.

- Fat-soluble homopolymers of this kind may be selected from polyvinyl stearate, polyvinyl stearate crosslinked  
35 using divinylbenzene, diallyl ether or diallyl phthalate, polystearyl (meth)acrylate, polyvinyl laurate, polylauryl (meth)acrylate, it being possible for these poly (meth)acrylates to be crosslinked using

ethylene glycol dimethacrylate or tetraethylene glycol dimethacrylate.

5 The fat-soluble homopolymers and copolymers defined above are known and are described in particular in the application FR-A-2232303; they can have a weight-average molecular weight ranging from 2000 to 500 000 and preferably from 4000 to 200 000.

10 As fat-soluble film-forming polymers which can be used in the invention, mention may also be made of polyalkylenes and especially the copolymers of  $C_2$ - $C_{20}$  alkenes, such as polybutene, alkylcelluloses with a linear or branched, saturated or unsaturated  $C_1$  to  $C_8$   
15 alkyl radical such as ethylcellulose and propylcellulose, vinylpyrrolidone (VP) copolymers and especially the copolymers of vinylpyrrolidone and of  $C_2$  to  $C_{40}$  or, better still,  $C_3$  to  $C_{20}$  alkene. Possible examples of VP copolymers which can be used in the  
20 invention include VP/vinyl acetate, VP/ethyl methacrylate, butylated polyvinylpyrrolidone (PVP), VP/ethyl methacrylate/methacrylic acid, VP/eicosene, VP/hexadecene, VP/triacontene, VP/styrene and VP/acrylic acid/lauryl methacrylate copolymer.

25 The composition according to the invention may comprise a plasticizer which promotes the formation of a film with the film-forming polymer. Such a plasticizer may be selected from all compounds known to the person  
30 skilled in the art as being capable of fulfilling the desired function.

The composition according to the invention may also comprise a dyestuff such as pulverulant dyestuffs, fat-soluble colorants or water-soluble colorants. This  
35 dyestuff may be present in an amount ranging from 0.01% to 30% by weight, relative to the total weight of the composition.

The pulverulant dyestuffs may be selected from pigments and nacres.

- 5 The pigments can be white or coloured, mineral and/or organic, and coated or uncoated. Among mineral pigments, mention may be made of titanium dioxide, optionally surface-treated, zirconium oxide, zinc oxide or cerium oxide, and also iron oxide or chromium oxide,  
10 manganese violet, ultramarine blue, chromium hydrate and ferric blue. Among organic pigments, mention may be made of carbon black, pigments of D & C type, and lacs based on cochineal carmine, barium, strontium, calcium and aluminium.

15

The nacres may be selected from white nacreous pigments such as mica coated with titanium or with bismuth oxychloride, coloured nacreous pigments such as titanium mica with iron oxides, titanium mica with, in  
20 particular, ferric blue or chromium oxide, titanium mica with an organic pigment of the type mentioned above, and also nacreous pigments based on bismuth oxychloride.

- 25 The fat-soluble colorants are, for example, Sudan red, D&C Red 17, D&C Green 6,  $\beta$ -carotene, soya oil, Sudan Brown, D&C Yellow 11, D&C Violet 2, D&C Orange 5, quinoline yellow and annatto. The water-soluble colorants are, for example, beetroot juice, methylene  
30 blue, the disodium salt of ponceau, the disodium salt of alizarin green, quinoline yellow, the trisodium salt of amaranth, the disodium salt of tartrazine, the monosodium salt of rhodamine, the disodium salt of fuchsin, and xanthophyll.

35

The composition of the invention may also comprise any additive normally used in cosmetics, such as antioxidants, fillers, preservatives, fragrances,

neutralizing agents, thickeners, vitamins, and the mixtures thereof.

5 Of course, the person skilled in the art will take care to select the possible additional additives and/or the amount thereof in such a way that the advantageous properties of the composition according to the invention are not, or are not substantially, adversely affected by the intended addition.

10

The composition according to the invention may be manufactured by the known processes which are generally used in the cosmetics field.

15 The invention also relates to a cosmetic process for treating or making up keratin fibres, comprising the application to said keratin fibres of the composition as described above.

20 The invention also relates to a process for coating the eyelashes, comprising the application to the eyelashes of the composition described above.

25 The invention also relates to the use of the composition, as described above, for making up keratin fibres and also to the use of this composition for obtaining easy and homogeneous application and makeup which exhibits an excellent volumizing and separating effect.

30

The invention will now be described with reference to the following examples, which are given by way of nonlimiting illustration.

35 EXAMPLES

Several mascara compositions were prepared and characterized according to the invention.



The formulations according to the invention are formulations of the fatty phase/water emulsion type which are generally defined in the following way:

5	Fatty phase	x%
	Stearic acid	5.82%
	Neutralizing agents	2.9%
	Black iron oxide	8%
10	Hydroxyethylcellulose	0.91%
	Gum arabic	3.45%
	Additives, preservatives, water	qs

Described in the table below in Example 1 is a composition according to the invention, whose solids content and consistency index were measured.

Also indicated in this table, for comparison, are the solids contents and the consistency indices of 2 prior art compositions.

Table

Test	Solids content (%)	Consistency (Pa)	Type of fatty phase	% fatty phase = x
No. 1 according to the invention	56.8	490	Mixture of polybutene/copolymer of stearyl acrylate and N-vinylpyrrolidone (40/60) (described above - Example A)	35
Comparative Weightless Volume wax free mascara	28.6	/	Without waxes	0

Comparative Volum Express	39	2030	/	
Comparative Intencils	41.3	570	/	/

The Volum Express mascara is sold commercially under the trade mark Maybelline as a volumizing mascara.

- 5 The Intencils mascara is sold commercially under the trade mark Lancôme as a volumizing mascara.

- 10 The Weightless Volume wax free mascara is sold commercially under the trade mark Neutrogena as a wax-free volumizing mascara.

- 15 The table above shows that only the compositions of the invention, although they contain no wax, exhibit a high or even very high solids content in tandem with a low consistency.

They make it possible to make up the eyelash homogeneously and rapidly while adding volume.

CLAIMS

1. Cosmetic composition for making up or caring for keratin fibres, which does not contain waxes and which has a solids content defined by a dry solids extract of greater than 45% by weight.
2. Composition according to Claim 1, which has a consistency index of less than 1000 Pa.
3. Composition according to Claim 1, having a dry solids extract of greater than 46% by weight, preferably greater than 47% by weight, more preferably greater than 48% by weight, and better still greater than 50% by weight.
4. Composition according to any one of the preceding claims, having a consistency index of from 1 to 900, preferably from 10 to 800.
5. Composition according to any one of the preceding claims, comprising at least one fatty phase comprising at least one structuring agent.
6. Composition according to Claim 5, in which the fatty phase represents from 10 to 60%, preferably from 15 to 50%, more preferably from 20 to 40% of the total weight of the composition.
7. Composition according to Claim 5, in which the structuring agent has a tack value  $\geq 0.1$  N.s, in particular from 0.1 to 30 N.s; preferably  $\geq 0.5$  N.s, in particular from 0.5 N.s to 20 N.s; better still  $\geq 0.8$  N.s, in particular from 0.8 to 10 N.s; and even better still  $\geq 1$ , in particular from 1 to 5 N.s.

8. Composition according to Claim 5, in which the structuring agent has a hardness value  $\leq 30$  MPa, in particular between 0.01 and 30 MPa; preferably between 0.05 and 25 MPa; better still between 0.1 and 20 MPa.
9. Composition according to Claim 5, in which the structuring agent consists of the combination of a specific compound and at least one oil.
10. Composition according to Claim 9, in which the specific compound is selected from semi-crystalline polymers; fatty-phase rheological agents, such as polyamide-type polymers and hydrophobic silicas; and mixtures thereof.
11. Composition according to Claim 10, in which the semi-crystalline polymers are selected from polyacrylates which are modified by an alkyl chain, are solid at ambient temperature and have a melting point of more than 30°C and less than 150°C.
12. Composition according to Claim 11 or Claim 9, in which the oil is selected from volatile and non-volatile hydrocarbon oils, silicone oils and/or fluoro oils, and mixtures thereof.
13. Composition according to any one of Claims 9 to 12, in which the oil has a molecular mass of greater than or equal to 250 g/mol, in particular between 250 and 10 000 g/mol, preferably greater than or equal to 300 g/mol, in particular between 300 and 8000 g/mol, and better still greater than or equal to 400 g/mol, in particular between 400 and 5000 g/mol.

14. Composition according to any one of Claims 9 to 13, in which, in the fatty phase, the ratio of the oil(s) to the specific compound(s) is from 10/90 to 90/10, preferably from 20/80 to 80/20 and more preferably from 30/70 to 70/30.
15. Composition according to any one of the preceding claims, which is an anhydrous composition.
16. Composition according to any one of Claims 1 to 14, comprising water or a mixture of water and hydrophilic organic solvent(s).
17. Composition according to Claim 10, in which the hydrophilic organic solvent(s) is (are) selected from monoalcohols having 2 to 5 carbon atoms, polyols having 2 to 8 carbon atoms, C<sub>3</sub>-C<sub>4</sub> ketones and C<sub>2</sub>-C<sub>4</sub> aldehydes.
18. Composition according to either one of Claims 16 and 17, in which the water or the mixture of water and hydrophilic organic solvent(s) is present in an amount ranging from 0.1% to 90% by weight, relative to the total weight of the composition, and preferably from 0.1% to 60% by weight.
19. Composition according to any one of the preceding claims, characterized in that it comprises a film-forming polymer.
20. Composition according to Claim 19, in which the film-forming polymer is selected from the group made up of vinyl polymers, polyurethanes, polyesters, polyamides, polyureas and cellulosic polymers.
21. Composition according to Claim 20, in which the film-forming polymer is present in an amount, in

- 51 -

terms of dry polymer material, ranging from 0.1% to 60% by weight relative to the total weight of the composition, preferably from 0.5% to 40% by weight, and better still from 1% to 30% by weight.

- 5
22. Composition according to any one of the preceding claims, characterized in that it comprises a dyestuff.
- 10 23. Composition according to Claim 22, in which the dyestuff is selected from pigments, nacles, fat-soluble colorants and water-soluble colorants.
- 15 24. Composition according to Claim 22 or Claim 23, in which the dyestuff is present in an amount ranging from 0.01% to 30% by weight, relative to the total weight of the composition.
- 20 25. Composition according to any one of the preceding claims, characterized in that it comprises a cosmetic additive selected from antioxidants, fillers, preservatives, fragrances, neutralizing agents, thickeners, surfactants, cosmetic or dermatological active agents, plasticizers, 25 coalescents, and mixtures thereof.
26. Composition according to any one of the preceding claims, which is a makeup composition, a makeup base, a "topcoat" composition to be applied over 30 makeup, or a composition for treating or caring for keratin fibres.
27. Composition according to any one of the preceding claims, which is a composition for coating the 35 eyelashes, in particular a composition for making up the eyelashes, also called mascara, a composition to be applied over eyelash makeup, also called topcoat, or else a composition for

treating the eyelashes, in particular the eyelashes of human beings or false eyelashes.

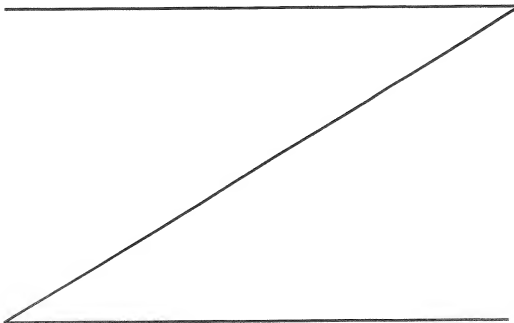
28. Composition according to Claim 27, which is a  
5 mascara.

29. Cosmetic process for treating or making up keratin  
fibres, comprising the application to said keratin  
fibres of a composition according to any one of  
10 Claims 1 to 28.

30. Process for coating the eyelashes, comprising the  
application to the eyelashes of a composition  
according to any one of Claims 1 to 28.  
15

31. Use of a composition according to any one of  
Claims 1 to 28, for making up keratin fibres.

32. Use of a composition according to any one of  
20 Claims 1 to 28, for obtaining easy and homogeneous  
application and makeup which exhibits an excellent  
volumizing and separating effect.



- 15 - fatty alcohols having from 12 to 26 carbon atoms,  
such as octyldodecanol, 2-butyloctanol, 2-hexyldecanol,  
2-undecylpentadecanol and oleyl alcohol;  
- fluoro oils which are optionally partially  
hydrocarbon-based and/or silicone-based;
- 20 - silicone oils such as volatile or non-volatile  
linear or cyclic polydimethylsiloxanes (PDMS);  
polydimethylsiloxanes containing alkyl, alkoxy or  
phenyl groups, which groups are pendant or at the end  
of the silicone chain and have from 2 to 24 carbon  
25 atoms; phenyl silicones such as phenyl trimethicones,  
phenyl dimethicones, phenyltrimethylsiloxydiphenyl-  
siloxanes; diphenyl dimethicones, diphenylmethyl-  
diphenyltrisiloxanes and 2-phenylethyl trimethyl-  
siloxy-silicates, and
- 30 - mixtures thereof.

The oil preferably has a molecular mass of greater than  
or equal to 250 g/mol, in particular between 250 and  
10 000 g/mol, preferably greater than or equal to  
35 300 g/mol, in particular between 300 and 8000 g/mol,  
and better still greater than or equal to 400 g/mol, in  
particular between 400 and 5000 g/mol.

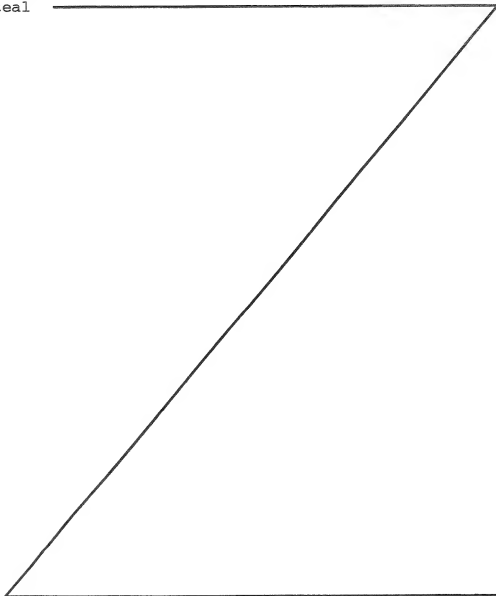


Generally, in the fatty phase, the ratio of the oil(s) to the specific compound(s) is 10/90 to 90/10, preferably 20 to 80, and even more preferably 30/70 to 70/30.

5

This oil may be selected from:

- polybutylenes such as Indopol H-100 (of molar mass or MM = 965 g/mol), Indopol H-300 (MM = 1340 g/mol) and Indopol H-1500 (MM = 2160 g/mol), which are sold or manufactured by Amoco;
- 10 - hydrogenated polyisobutylenes such as Panalane H-300 E, sold or manufactured by Amoco (M = 1340 g/mol), Viseal 20000, sold or manufactured by
- 15 Synteal



CLAIMS

1. Leave-in cosmetic composition for making up or caring for keratin fibres, comprising at least one fatty phase comprising at least one structuring agent which consists of the combination of a specific compound and at least one oil, said composition not containing waxes and having a solids content defined by a dry solids extract of greater than 45% by weight.
2. Composition according to Claim 1, which has a consistency index of less than 1000 Pa.
3. Composition according to Claim 1, having a dry solids extract of greater than 46% by weight, preferably greater than 47% by weight, more preferably greater than 48% by weight, and better still greater than 50% by weight.
4. Composition according to any one of the preceding claims, having a consistency index of from 1 to 900, preferably from 10 to 800.
5. Composition according to Claim 1, in which the fatty phase represents from 10 to 60%, preferably from 15 to 50%, more preferably from 20 to 40% of the total weight of the composition.
6. Composition according to Claim 1, in which the structuring agent has a tack value  $\geq 0.1$  N.s, in particular from 0.1 to 30 N.s; preferably  $\geq 0.5$  N.s, in particular from 0.5 N.s to 20 N.s; better still  $\geq 0.8$  N.s, in particular from 0.8 to 10 N.s; and even better still  $\geq 1$ , in particular from 1 to 5 N.s.

7. Composition according to Claim 1, in which the structuring agent has a hardness value  $\leq 30$  MPa, in particular between 0.01 and 30 MPa; preferably between 0.05 and 25 MPa; better still between 0.1 and 20 MPa.
8. Composition according to Claim 1, in which the specific compound is selected from semi-crystalline polymers; fatty-phase rheological agents, such as polyamide-type polymers and hydrophobic silicas; and mixtures thereof.
9. Composition according to Claim 8, in which the semi-crystalline polymers are selected from polyacrylates which are modified by an alkyl chain, are solid at ambient temperature and have a melting point of more than 30°C and less than 150°C.
10. Composition according to Claim 1, in which the oil is selected from volatile and non-volatile hydrocarbon oils, silicone oils and/or fluoro oils, and mixtures thereof.
11. Composition according to any one of the preceding claims, in which the oil has a molecular mass of greater than or equal to 250 g/mol, in particular between 250 and 10 000 g/mol, preferably greater than or equal to 300 g/mol, in particular between 300 and 8000 g/mol, and better still greater than or equal to 400 g/mol, in particular between 400 and 5000 g/mol.
12. Composition according to any one of the preceding claims, in which, in the fatty phase, the ratio of the oil(s) to the specific compound(s) is from 10/90 to 90/10, preferably from 20/80 to 80/20 and more preferably from 30/70 to 70/30.

13. Composition according to any one of the preceding claims, which is an anhydrous composition.
- 5 14. Composition according to any one of Claims 1 to 12, comprising water or a mixture of water and hydrophilic organic solvent(s).
- 10 15. Composition according to Claim 8, in which the hydrophilic organic solvent(s) is (are) selected from monoalcohols having 2 to 5 carbon atoms, polyols having 2 to 8 carbon atoms, C<sub>3</sub>-C<sub>4</sub> ketones and C<sub>2</sub>-C<sub>4</sub> aldehydes.
- 15 16. Composition according to either one of Claims 14 and 15, in which the water or the mixture of water and hydrophilic organic solvent(s) is present in an amount ranging from 0.1% to 90% by weight, relative to the total weight of the composition, and preferably from 0.1% to 60% by weight.
- 20 17. Composition according to any one of the preceding claims, characterized in that it comprises a film-forming polymer.
- 25 18. Composition according to Claim 17, in which the film-forming polymer is selected from the group made up of vinyl polymers, polyurethanes, polyesters, polyamides, polyureas and cellulosic polymers.
- 30 19. Composition according to Claim 18, in which the film-forming polymer is present in an amount, in terms of dry polymer material, ranging from 0.1% to 60% by weight relative to the total weight of the composition, preferably from 0.5% to 40% by weight, and better still from 1% to 30% by weight.
- 35

20. Composition according to any one of the preceding claims, characterized in that it comprises a dyestuff.
- 5 21. Composition according to Claim 20, in which the dyestuff is selected from pigments, nacles, fat-soluble colorants and water-soluble colorants.
- 10 22. Composition according to Claim 20 or Claim 21, in which the dyestuff is present in an amount ranging from 0.01% to 30% by weight, relative to the total weight of the composition.
- 15 23. Composition according to any one of the preceding claims, characterized in that it comprises a cosmetic additive selected from antioxidants, fillers, preservatives, fragrances, neutralizing agents, thickeners, surfactants, cosmetic or dermatological active agents, plasticizers, coalescents, and mixtures thereof.
- 20 24. Composition according to any one of the preceding claims, which is a makeup composition, a makeup base, a "topcoat" composition to be applied over makeup, or a composition for treating or caring for keratin fibres.
- 25 25. Composition according to any one of the preceding claims, which is a composition for coating the eyelashes, in particular a composition for making up the eyelashes, also called mascara, a composition to be applied over eyelash makeup, also called topcoat, or else a composition for treating the eyelashes, in particular the eyelashes of human beings or false eyelashes.
- 30 35 26. Composition according to Claim 25, which is a mascara.

27. Cosmetic process for treating or making up keratin  
fibres, comprising the application to said keratin  
fibres of a composition according to any one of  
5 Claims 1 to 26.
28. Process for coating the eyelashes, comprising the  
application to the eyelashes of a composition  
according to any one of Claims 1 to 26.
- 10 29. Use of a composition according to any one of  
Claims 1 to 26, for making up keratin fibres.
- 15 30. Use of a composition according to any one of  
Claims 1 to 26, for obtaining easy and homogeneous  
application and makeup which exhibits an excellent  
volumizing and separating effect.